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ABSTRACT

Proceedings of the ninth international conference on improving university teaching, whose theme was "The Social Dimensions and Demands of Teaching and Technology," are presented. Texts of more than 40 papers are included. These papers were offered in seminars in the following categories: (1) Non-Traditional Methods and Settings for Teaching the Liberal Arts: Three Case Studies; (2) What We Have Learned from Our Successes and Failures in Computer-Assisted Instruction; (3) How Colleges and Universities Evaluate Professors; (4) Improving Student Performance through Automated Feedback Systems on Mainframe and Microcomputers; (5) Studies of University Lecturing; (6) Motivating Faculty in a Time of Adversity; (7) Video in Higher Education; (8) University Organization: Opportunity and Enrichment; (9) Research on Student Learning; (10) Being Sensitive to Student Responses to Computers in Courses; (11) Partnership in Professional Development; (12) The Development and Impact of Educational Television upon University Teaching and Organization: A Case Study Approach, United States, United Kingdom, Northern Ireland; and (13) Academic Work and Community Projects. (LB)

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NINTH INTERNATIONAL CONFERENCE
ON IMPROVING UNIVERSITY TEACHING

6-9 July 1983

Dublin, Ireland

PROCEEDINGS

Under the Auspices of

The University of Maryland University College

and

National Institute for Higher Education Dublin

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GREETINGS

D. O'Hare
Director
National Institute for Higher Education Dublin

A Aire, A Uaisle agus a chairde

Is mor an onoir agus an plaisiur dom failte a chur roimh uilig chuig an comhdhail oideachais eadarnaisiunta seo. Is la mor e don institiuid seo, go athraide agus do phobal acaduil na hEirinn i gcoitinne. Taimid fior bhuioch duit a Aire go raibh tu sasta teacht anseo chun tus a chur le himeachtai na seachtaine gi go bhfuil tu an-ghoitheach le deachtractai an tStait.

Chancellor Massey, Minister, distinguished guests, ladies and gentlemen

I should like to say in English what I have said in our native language - that I wish to welcome all of you to this International Educational Conference. It is a very important day in the life of the Institute and in the life of the academic community in Ireland generally. We are particularly grateful to you, Minister, that you were prepared to give so generously and so enthusiastically of your time to open this Conference and to address us, notwithstanding the very many demands of your office as Minister for Education but also as a member of Government which is grappling so tenaciously with the effects of the worldwide recession from which, unfortunately, Ireland is not immune.

A special word of welcome to all participants from so many countries who are represented here today. A very special welcome to Ben Massey, Chancellor of the University of Maryland University College, who is responsible for the high regard in which this Conference is held.

I believe that the title chosen for this Conferance is particularly relevant, that is, "The Social Dimensions and Demands of Teaching and Technology". It emphasises that the higher education sector must continue to emphasise quality, exchange experiences, develop new approaches, become more cost effective, be relevant to current and projected needs and take advantage of the new technology. These are issues for the international community in general but also for Ireland.

Our greatest natural resource in Ireland is our young people - over 50% of our population being under the age of 25 and the quality of our undergraduates entering higher education is much higher, I understand, than is the case in many other countries.

We are, of course, experiencing a recession and the demand for graduates has fallen off in response to this recession. A major question therefore for our government is whether to educate for recession or for recovery. It is my view that we should educate for recovery because we must produce the highly educated work force for our technological age; our failure to do so will result in an inadequate and defective response to the recovery when it comes and to the general need in the economy for more and new sophisticated skills.

As a small open economy we must compete with the United Kingdom, the United States, Japan and other European nations in international markets and as a small country we must seem to run faster, so to speak, than these large countries. The question, therefore, is where - not whether - can resources be found to assist in the development of higher education and to give greater numbers of young people access to it. In addition, we must question how existing resources can be used more effectively. I understand that a review of educational policy and priorities has been undertaken by the Minister; this Institute and others have been happy to contribute in a positive way to it and we look forward to the outcome with considerable interest.

This Conference is, for me, about quality and relevance. We at NIHE Dublin are, therefore, particularly happy to act as host for this the 1983 Conference of IUT.

We are particularly pleased to do so because our new Institute, which was founded in 1974 and received its first students in 1980, is an expression of the Government's commitment to a new emphasis on industrial and business development while adhering to the highest international academic standards. It is a happy coincidence that - in addition to our development of undergraduate and postgraduate courses in Research work and Science, Business, Applied Languages, Computing, Communications, Engineering - we are developing Distance Education programmes for the country as a whole.

Our mission is, therefore, to be relevant but not in a narrow, short-sighted sense.

We see the hosting of this Conference as a real contribution to educational development and exchange and understanding internationally and within Ireland.

Could I finish, therefore, by thanking the Minister once again for agreeing to open the Conference, by welcoming Ben Massey and his colleagues from Maryland and welcoming all participants to Ireland. I would like to express my good wishes for the success of this Conference.

22

ADDRESS BY GEMMA HUSSEY, T.D., MINISTER FOR EDUCATION AT THE OFFICIAL OPENING OF THE 9TH INTERNATIONAL CONFERENCE ON IMPROVING UNIVERSITY TEACHING AT NIHE DUBLIN, ON WEDNESDAY, 6 JULY 1983 AT 9.15AM.

In aois seo na teicneolaíochta, tá áthas orm go raibh ar mo chumas glacadh leis an gcuireadh a tugadh dom a bheith i láthair anseo inniú chun an naoiú Comhdháil Idirnaisiúnta le Teagasc Ollscoile a Fheabhsú, a oscailt go foirmiúil. Is breá liom deis a bheith agam bualadh le baill na comhdhála, a thagann as ceithre háirde na cruinne. Tá suim agam i saothar ar bith chum feabhas a chur ar chursaí oideachais, agus is mór an tógaíl croí dom é go bhfuil iarracht á dhéanamh ar dul chun chinn sna cursaí soe.

I desire to thank the organisers of the ninth International Conference on Improving University Teaching for the invitation to address this distinguished gathering upon its opening session.

Your invitation gives me the opportunity not only to extend on behalf of my Government, a céad míle fáilte to the participants, but to affirm the Government's interest in this Conference and its endorsement of the Conference's aims and activities. The occasion also permits me to indicate my own deep interest in the work of the Conference, but more importantly, to stress my commitment and that of my Government to all developments for the improvement of teaching.

I understand that there are about 250 participants at the Conference, representing 23 different countries and coming from the five continents; and that previous venues for the Conference have spanned the globe - Berlin; Japan; London; Lausanne - to name but a few.

Our formalised system of education in Ireland goes back to our renowned monastic settlements which predated universities. Eduation and learning have always been given pride of place throughout our varied history and even at the lowest ebb, during the penal times, we have clung tenaciously to our traditions of education with our hedge-schools where the classics were standard on the curriculum. Indeed, our hedge-schools gained almost as much renown in history as our older monastic centres of culture!

Today, our universities and third-level institutions are worthy successors to our great educators of the past - worthy, too, of our place in the line of great traditional european centres - Salerno, Paris, Bologna, Heidelberg, Oxford, Cambridge and so many others.

We, too, have moved to meet the technology explosion and the changing needs of education in recent decades. There has been a remarkable acceleration of the evolution of our third-level system in the past fifteen years, following the report produced by the Commission on Higher Education in 1967.

In 1971 we established on a statutory basis the Higher Education Authority, which has the function of planning and co-ordinating the development of higher education in the State. The Authority plays an important role in endeavouring to extract the optimum from our resources; in rationalising programmes; and in ensuring that unnecessary duplication is avoided.

Our universities and traditional institutions have served and are serving the nation well. They are adapting fully to the changing needs of Irish society. But a major development has been the significant investment of state resources in a group of third level educational institutions which concentrate particularly on applied technology. The development in the technological area of the higher education sector is a vital component in the establishment of a sound industrial, agricultural, and business base in Ireland. The concentration on applied programmes of study, research and development is seen as being central to the provision of highly educated manpower for our industrial scene.

In order to match our industrial development by development in the technological area of the higher education sector, it was necessary to establish a number of new institutions to supplement substantially the output of the universities and the colleges of technology in the City of Dublin which up to then constituted the only institutions offering courses in higher technology. These older institutions continue, of course, to flourish and indeed, to expand.

A new group of Regional Technical Colleges has been established in nine provincial centres - Athlone, Carlow, Cork, Dundalk, Galway, Letterkenny, Sligo, Tralee and Waterford. Further Regional Technical Colleges are planned for the Dublin suburban areas. The Regional Technical Colleges provide apprentice, technician and professional courses. The courses they offer are related to the particular needs of the region in which they are situated.

Two further exclusively third-level institutions of higher technology complete recent developments in the technological area of higher education - the National Institutes for Higher Education at Limerick and Dublin, both of which were established by statute in 1980.

The National Institute for Higher Education, Limerick, was the first of these two institutions to open its doors in Autumn 1972. This Institute is located in the south-west, three miles outside the city of Limerick on the banks of the river Shannon. The first phase of accommodation has been provided for this Institution and the second phase is under construction.

The National Institute for Higher Education, Dublin, is our host Institution today. The Institute here is situated on a 50 acre campus, northwest of the city. The Institute is at an earlier stage of development than its sister institution - its first group of 200 students was admitted in autumn 1980 - but already it has made a considerable impact on the educational scene and the demand for student places is very high. The availability of student places must necessarily be limited as the NIHE Dublin has only completed its initial phase of building.

An award-making body, the National Council for Educational Awards, was established by statute in 1979 to recognise courses and make degree, diploma and certificate level awards in the third-level non-university sector. A major responsibility of the NCEA is to ensure that the standards of the awards it makes are comparable in status and standing to awards made in Universities. The Council also plays a co-ordinating role in establishing standards, co-ordinating programmes, and co-ordinating transfer arrangements for students in the non-university area.

The development of the higher education infrastructure is an ongoing process and many major projects are in course of planning - the next phase of the National Institute for Higher Education Dublin, a new School of Dentistry for Dublin which associates with Trinity College, a new School of Engineering for University College Dublin, and major expansion projects for other institutions of higher education.

This brief sketch of recent developments here in higher education illustrates how particularly appropriate it is that this conference with its theme defined as "The Social Dimensions and Demands of Teaching with Technology" should be held in this country and located in this particular institution.

Technological revolution confronts all of us, and educators must be in the forefront in harnessing the multitude of aids and facilities it offers - information storage and retrieval; audio visual aids; communication aids; computers; the broad range of electronic technologies; to name but a few. These must be harnessed to dual use - as valuable teaching supports and as supplements to the teacher's effort; and as techniques in the use of which students themselves must be educated.

These technologies can only be of benefit to the extent to which they are properly and effectively used. Thus the teacher himself is faced with the necessity not only to accept the new technologies, but must have the determination to learn the techniques of their operation and integrate them into his teaching system.

I note from the range of papers presented that during the next few days you will be focusing your study in a number of particular directions:

- on the impact of technology itself
- on its impact on administration
- on the impact for students of using the new technologies
- on better student counselling and tutoring.

Your programme is planned to encourage an unusually high participation rate and I am impressed at the level of collaboration between institutions and that this collaboration extends across national boundaries.

I have no doubt that much of this spirit of co-operation has been generated and encouraged by this series of Conferences, and that this Conference will add further to this growing spirit of sharing and collaboration between Academics. There is the intangible hidden benefit to be borne in mind, that teachers can share and supplement one another's expertise, through further contacts, visits, and exchanges.

The objectives of this Conference constitute yet another facet of a problem which, one way or another, is exercising the minds of most of us in these difficult economic times - how to combine our resources in the most effective and imaginative way to make the greatest possible contribution to education, and through education, to our general economic development.

It is you, the participants, who will make this Conference a success. I wish you well in your stimulating and worthwhile task. I have no doubt you will rise to the challenge.

Our thanks and congratulations are due to all those who have worked so hard in organising this Conference.

I now declare the Conference open.

Bail Ó Dhia ar an Obair.

WELCOME

T. Benjamin Massey
The University of Maryland University College

Welcome to our ninth annual conference which explores the improvement of teaching in colleges and universities around the world. There has been at least one noticeable trend over these nine years, and it is that my own remarks have gotten shorter and shorter. This year we decided to give me five minutes. However, to set a good example I feel pressure to speak for only four-and-a-half -- of which thirty seconds are now gone.

It isn't that there's less to say about improving teaching and learning in postsecondary education. The fact is, though, that it is no longer necessary to "set the scene" for our endeavors at this conference, nor to "plead the case" for the conference itself. In 1975 when the conference was first held, the higher education community in most countries had only begun to acknowledge that there was a problem. The problem was and is that, our academic traditions being what they are, postsecondary faculty are not trained in the art of teaching. Not all professors teach well by nature, and their lack of training in pedagogy has had serious implications for how effectively we are imparting knowledge and thus to what extent the very purpose of higher education is being fulfilled.

Almost a decade later we have a clear recognition of the task and we are increasingly sophisticated about how we approach it.

That task and those approaches are what we are here to talk about this week. Ours is a unique conference, one that crosses disciplinary lines and unites faculty and administrators of diverse backgrounds in a commitment to excellence in teaching for its own sake.

If there is an overarching goal of this conference, it is that of sharing the information we all need both for program implementation and effective advocacy. If there is a second most important goal, it is that of doing justice to the complexity of the issues we face as we undertake to improve teaching. Recently the French National Assembly acted against the use of student evaluations in considering professors for promotion. I expect that among those of us here today opinion would be divided as to the correctness of the Assembly's position. In many countries student evaluations are among the more acceptable means of assessing faculty performance, and we would not want to do without them. At the same time we have reason to be sensitive to their misuse in justifying decisions about promotion. This is but one example of a complex question. Another complex issue is higher education's potential use and misuse of the new technology -- about which we will hear knowledgeable points of view this morning.

For their hospitality we would like to thank the Republic of Ireland, the City of Dublin, and most particularly the National Institute for Higher Education, our hosts. The local organization provided by our colleagues at the Institute is among the finest we have seen. We look forward to a week of good work and good dialogues.

PAPER FOR IUT CONFERENCE 6-9/7/83

FINANCIAL CONSTRAINT, INNOVATION, EDUCATIONAL TECHNOLOGY, ON THE PECULIAR IRISH SCENE

Dominic O'Laoghaire

Higher Education Authority, Dublin.

1. The peculiarity of the Irish scene

This last quarter of the twentieth century is marked in many countries by declining numbers of students, particularly in higher education. It is also marked by conditions of economic recession. In Ireland, however, the trend in student numbers is still upwards; in fact it is not an exaggeration to describe it as a tide still in full flood. Great efforts have been made in the course of the past twenty years to allocate appropriate financial resources. The prospect of a real decline in those resources over the next few years has implications which will demand honesty and courage as well as some sacrifice from all of us.

2. The bare facts in regard to total numbers of students are still startling even to those of us who are familiar with them. The twenty years between 1939 and 1959 witnessed a doubling in the number of second-level students from 45,000 to 90,000. The next twenty years to 1979 witnessed the tripling of the latter figure to over 280,000. The 1982 total is 307,400. The full impact of these figures has not yet taken effect in third level education. The 1939 figure of 7,600 full-time students at third level had reached 12,000 by 1959 and 37,000 by 1978. It is 44,500 for 1982 and is projected to reach 55,000 by 1990.

3. Two further facts of life need to be added to complete the preliminary picture. The first is that new institutions were necessary and have become available only since 1970: -

> Regional Technical Colleges within the Vocational Education Sector, a sector already encompassing Technological Colleges in Dublin, Limerick and Cork
>
> and
>
> National Institutes for Higher Education in Limerick and Dublin.

There is a difference in the channel of financing as between these two groups, the NIHE's are designated to the HEA, the other Colleges are not. All the Colleges in the non-University sector - including others as well as the two groups above - now contain nearly half of the full-time students at third level. The second fact is that the University Colleges, all older institutions, have seen their full-time student numbers rise from 9,000 in 1959 to 23,000 in 1979 and 24,000 in 1982 with a relatively inadequate provision by way of new building and a serious time-lag, not yet overcome, in the matter of services, even such essential services as libraries.

4. There is one further fact peculiar to the Irish scene and it has two aspects. In the matter of staffing there has, of course, been an explosion over the past twenty years and we have been fortunate that it coincided with some winding down of programmes in other countries with the result that the quality of our large and sudden increase is high. The two aspects are that, on the one hand, practically all our appointments have traditionally been on the basis of life-time service with full superannuation benefit and, on the other, that, particularly in the Universities but also to some extent in the other Colleges, the ratio of academic and support staff to student full-time equivalents has not really been adequate - or flexible enough? - for modern requirements.

Finally, and we ourselves need reminding of this from time to time, there is a well established tradition of what can only be described as self-help operating at all levels of our educational system. At first and second level there is substantial - and voluntary - support of schools by the local community. Without this, the explosion in numbers, particularly at second level, could not have been absorbed. At third level self-help is also substantial and is exemplified, in the case of the Universities especially, by a relatively high level of student fees and a relatively low proportion of students (23%) being supported by State grants, and that to a limited extent. On the other hand, however, students fees in the Regional Technical Colleges are at an extremely modest level.

The financial problem

6. This is present and persistent in all sectors of our economy. If we focus particularly on higher education we must remember that it is only part of the whole problem. We must also, however, bear our responsibility for urging its needs and indicating clearly what are the likely implications of the level of resources at which it may find itself fixed from year to year. In our present context it is not possible, without too much confusion, to go beyond the thirteen Institutions designated to the Higher Education Authority. Their grouping is somewhat arbitrary; it includes two Colleges of Education for second level teachers (Thomond College and NCAD) but not two others at that level nor five others for teachers in primary schools; it includes also two National Institutes but not the very large Dublin Institute of Technology nor the nine Regional Technical Colleges. This much is said for information only, the writer being completely convinced personally that this is no time for allowing real problems to be clouded by considerations of administrative tidiness.

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The case can be illustrated from the spread of institutions already designated to the Higher Education Authority, that is, so long as it is understood that the picture is incomplete, though not, it is suggested, unrepresentative. The picture is not, above all, intended to be exclusive because the Authority is charged by law with the responsibility of continuously reviewing the State's total demand and need for higher education.

7. It seems desirable to focus the picture a little more sharply by confining it (a) to nine teaching institutions (five University Colleges, two National Institutes, two Colleges of Education) and (b) to current income only, but including income from students fees, etc., as well as State grants. This produces a table as follows: -

	1970/71	1975	1980	1981	1982	1983 *
(1) Five University Colleges						
(a) whole time students	18,619	20,619	22,929	23,204	23,908	24,364
(b) whole time staff	n.a.	3298	4127	4191	4228	4249
(c) State Grants (£m)	6.2	17.6	44.0	56.5	62.5	65.9
(d) Students fees etc.(£m)	2.3	3.3	7.3	8.6	11.9	13.2
(e) Total (b)+(c) (£m)	8.5	20.9	51.3	65.1	74.4	79.1
(2) NIHE Limerick						
(a)	-	453	1,259	1,594	1,634	1,677
(b)	-	125	227	239	253	253
(c)	-	0.7	2.4	2.7	3.3	3.6
(d)	-	-	0.4	0.5	0.7	0.9
(e)	-	0.7	2.8	3.2	4.0	4.5
(3) NIHE Dublin						
(a)	-	-	-	191	570	983
(b)	-	46	64	122	149	169
(c)	-	0.05	0.3	1.5	2.3	2.6
(d)	-	-	0.07	0.2	0.4	0.7
(e)	-	0.05	0.37	1.7	2.7	3.3

		1970/71	1975	1980	1981	1982	1983 *
(4)	Thomond College						
	(a)	-	279	245	316	398	543
	(b)		53	105	116	116	118
	(c)	-	0.4	1.1	1.4	1.9	2.0
	(d)	-	-	0.13	0.19	0.2	0.27
	(e)	-	0.4	1.23	1.59	2.1	2.27
(5)	N.C.A.D.						
	(a)	120	163	441	485	497	465
	(b)	n.a.	n.a.	106	110	110	116
	(c)	n.a.	0.4	1.1	1.5	1.9	2.2
	(d)	n.a.	0.02	0.08	0.08	0.09	0.09
	(e)	n.a.	0.42	1.18	1.58	1.99	2.29

* Fees at 1982 December. n.a.: not available.

8. This paper is being prepared in late December 1982 and the implications of the level of current income presently proposed for 1983 are still under consideration in the Colleges. It seems opportune, however, to formulate, and hazard, even at this stage, some personal and tentative views, for the information of the Authority and the Minister in the first instance, and for presentation (and perhaps amendment) at the IUT Conference in July 1983.

9. These views may be summarised, as follows: -

   (a) a policy of retrenchment in financial terms has been in operation now for four years and the level set for 1983 represents another, but somewhat sharper, instalment of that policy which has already bitten very deeply in the non-pay area;

   (b) it remains to be decided - and the decision cannot be too long delayed - whether the 1983 (and later) levels of income can (or indeed should) be raised somewhat by further fee increases;

(c) it would appear that the position must be faced that, even with further fee increases, the year 1983 cannot be financed on a basis commensurate with the normal needs of the Colleges;

(d) even in conditions so adverse the numbers of students look likely to continue increasing at a rate of the order of 5% per annum, the dilemma for the Colleges being whether they can afford to turn away additional fee income but also how far they, and their students, can sustain worsening conditions;

(e) the crunch comes on staffing; one Minister for Education has had to refer bluntly to "over-manning" in certain areas and this has to be admitted - and not always in older disciplines - but the extent to which it can be overcome (particularly in the short term and without inordinate redundancy costs) must be recognised also; notwithstanding this, however, it would appear to be impossible for the Colleges, with student numbers increasing as they are, to face actual reductions in staff through the rigid application of a Government embargo on filling more than one-third of vacancies; some understanding must be reached - and urgently - on this matter and it may well have to include on the Colleges side some fairly substantial recourse to limited contract appointments, at least for an immediate period of crisis years.

Innovation and Technology

10. Against the background set out in the first two sections of this paper it may seem somewhat of a fool's errand to go searching for thoughts on innovation and technology.

On the contrary, however, and fortunately for the business of this Conference, the thoughts come crowding in and the problem is to keep them within reasonable compass. The fact is that when Colleges are faced with a sudden and continuing flood of students they must innovate and reach out also for new technology. When institutions are new, and staffs largely relatively youthful, innovation is practically a way of life and new technology its natural accompaniment. Our older institutions have seen their new wave also and they were never, in any event, quite so ancient and stiff, as some would have us believe. One of the glories of our Irish educational system, in my experience, has been a splendid flexibility, nowhere more clearly exhibited than at third level, and a readiness to welcome the new without parting too swiftly with the old and the proven. My greatest regret is that rigidities are creeping in, unnecessarily, from outside the Colleges and from outside the Authority especially in matters of staffing.

11. In relation to the recent past I would wish simply to list a number of striking instances of innovation and use of new technology already in operation. These are as follows: -

NIHE Dublin - pilot projects in distance education in farm management and computer fundamentals;

Thomond College of Education - joint degree in Physical Education and another curriculum subject to train teachers of physical education;

- interdisciplinary degrees for teachers of woodwork and building science; general and rural science; metalwork and engineering science;

NIHE Limerick	- modular systems employed in all programmes; - co-operative education period compulsory in all degree and diploma courses whereby students complete a practical period of work in a placement in employment related to their course of study; - continuous assessment system operates in all programmes;
UCD	- extensive use of video in staff development programmes, teacher education, role playing exercises; - automated audio-visual demonstration to aid students in laboratory experiments;
UCG	- video tapes produced to assist Anatomy students in examining specimens; - in lectures/demonstrations camera attached to microscope to relay picture via monitors so that all students can see experiments;
UCC	- staff development unit established to improve teaching;
TCD	- video used extensively for microteaching and practice in counselling; - video workshop provided for drama studies students; - in Phonetics a microprocessor has been interfaced with a battery of instruments through a single conditioning unit which controls them, collects and analyses data for diagnostic purposes; - extensive use of video in Biology courses to relay experiments to remote locations.

12. In relation to the future, one must resist the temptation to believing that one has to turn one's back on innovation and new technology in times of financial constraint. It is, of course, true that all things have a price tag but it is also true that one simply must adapt oneself to new conditions. The most important of our new conditions in higher education in Ireland is going to be how to cope with more students on more demanding courses but with resources certainly lesser than we would wish them to be. There is no single miracle of technology which will provide a solution. There has to be, however, a mixture of further innovation and of technological aids on a limited scale which will enable us to get over the hump without too great a sacrifice of quality and without inordinate cost.

13. With some temerity, as a non-specialist, but with the assurance of a passionate believer in common-sense and some experience in self-education by audio-visual means I hazard the following suggestions: -

(a) human teaching power is essential at the early stages of courses and should be concentrated there with a special mission to identify two groups, namely, those with sufficient motivation to be able to advance themselves with technological aids and those others who may need the stimulus of such aids to awaken sufficient motivation;

(b) notwithstanding the urgent need to increase the level of postgraduate output in a number of scientific and technological areas - which postulates a higher level of research activity in areas seen as vital to economic development - there also needs to be a greater commitment to the undergraduate teaching function for a period of crisis years: the balance to be achieved here will require that some difficult choices will have to be made regarding support for research activity across a wide spectrum of disciplines;

(c) advantage needs to be taken of all our accummulated experience of audio-visual methods to assist our general body of teachers at third level to adapt themselves to reaching out to cope with greater numbers but without losing contact;

(d) special advantage needs to be taken of the great opportunity of the distance education pilot project to seek to adapt it to an extension of teaching power within the Colleges as well as to outside centres.

Lest these suggestions be taken as a crude method of justifying the recruitment of less staff, I hasten to come to my concluding section.

The social aspect

14. Again as a non-specialist I hazard a conviction from experience, namely, that educational technology has been over-sold especially in developing countries. It simply does not replace the teacher. It extends the teacher's range and power but only if his motivation and that of his students are both adequate to the demands made upon them. As a way of avoiding expenditure on teachers or of compensating for lack of qualified teachers technology is, in my view, an illusion.

15. There is a very important corollary on the Irish scene. We need to economise certainly in higher education. We would be economising falsely in my view, if we put our limited resources into technological aids with any intention of saving on staff costs. We have a sufficiently grave unemployment problem as things are without adding to it unnecessarily. It seems to me that there is great scope for utilising

our resources of young well qualified graduates, most of them well adapted also to the use of technological aids, as well as our financial resources on the training side, to provide ourselves with a corps of, so-to-speak, technological aiders to our hard pressed first level of College teachers. I do not wish to be taken as advocating cut-price lecturers. That is far from my mind. I am concerned at what I see as an enormous social gap between the needs of increased numbers of students within the Colleges and the needs of increased numbers of graduated students outside the Colleges for whom the employment situation through normal appointment prospects are being pinched off by recession and embargo. It would be madness in my view, to over-indulge in expensive technology in such circumstances.

FINANCIAL CONSTRAINT, INNOVATION, EDUCATIONAL TECHNOLOGY ON THE PECULIAR IRISH SCENE

(ADDENDUM TO PAPER DRAFTED IN DECEMBER 1982)

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Introductory

1. As indicated in the original draft paper - copies of which are available for circulation - changes are to be foreseen even over a brief period of six months, and even in Ireland. It is desired in this addendum to the original paper to record some of those changes. It is intended, however, that the two papers should form the background to a more concentrated, and it is hoped a more coherent presentation at the Conference.

Amendments

2. There are three major changes to be noted. Firstly, the position of our State finances required further cutbacks in expenditure as it had originally been foreseen for 1983. The Budget of February 1983 produced a reduction of £1.3 million in recurrent grants to the HEA. This represents almost 2% on the figures for 1983 shown in paragraph 7 of the original draft; those figures, it may be mentioned, were already about 9% below the level which had been requested by the HEA. Secondly, in the context of the Budget reduction, it had to be decided that students' fees would be raised in the Universities and other HEA Institutions by a further 25% from October 1983; the increase in fees in other Colleges will be of a much greater precentage

order but those fees still remain at a level lower than that of the Universities. There is a certain balance between these two changes in the case of the HEA Institutions; the reduction in State grants for 1983 is £1.3 million, the additional income from students' fees is estimated to be of the order of £1 million. The third change is that the Minister for Education has initiated the preparation of a four-year action programme for education as a whole and that consideration is now being given, as a matter of urgency, to the prospect within that programme for the Institutions of Higher Education.

3. One further amendment, which it is necessary to mention, may well provide a major part of the theme for presentation to this Conference. That is contained in the following brief extract from the report of 1982 presented in February 1983 by our National Economic and Social Council:-

> "The Council welcomes the shift towards increased expenditure at the compulsory age groups but is concerned at the redistributive effects of continuing high levels of subsidy for third level students, whose backgrounds are predominantly those of middle and higher income families. While recognising that many aspects of third level education are important for economic and social development, the Council considers there is merit in considering changes in the methods of financing third level education."

The Irish problem as a whole

4. It is hoped that this Conference will pardon us, that is if we're wrong, for assuming that our problem, peculiar as it is, has universal overtones

and that, in thinking aloud about it, we may be raising issues of relevance not only to ourselves but to others. On that basis I propose now to try to draw together some disparate strands of thought and to focus them into the business of the Conference which, I remind myself, is the social dimensions and demands of teaching with technology and that in the overall context of improving university teaching.

5. The first element of our problem has a very important social dimension:- what overall number of third level students are we aiming at and how should they be distributed over our available facilities? Lest it might be thought that development up to now has been somewhat haphazard let me hasten to assure you that I do not subscribe to that idea in any way whatever. Much thought has been devoted to the overall number of students and to the mix within it. Much action has been taken to implement decisions resulting from that thought. The result is that, in my view, we are now reasonably enough placed to respond to the challenges of the future, massive as they are.

6. The question remains, however, as to what should be our future number of students. The HEA, looking at trends already apparent in July, 1979, then said that we might have to cope with 75,000 by 1991. The Fine Gael party's policy document of November 1980 envisaged 60,000-70,000 by 1991. The Government in 1980 set a target of places at 51,000 by 1990 and later revised this to 55,000. The present position is that we have actually reached 44,500 whole time students in 1982. As to the mix, the position is that there has been a very substantial shift towards the technical and the technological

areas, not only in the newer Institutions but in the older ones as well.

7. As recently as December 1980 the Fine Gael party's policy statement, already referred to, could include the following passage:-

> "The major problems in resource allocation over that period (twenty years) will lie in coming to decisions on the nature and location of new developments and new facilities rather than in allocating recurrent expenditure. These new developments will be required both to provide the skilled manpower to meet the needs of a developing economy and also to meet the increased social demand for higher education from a growing population of young people."

The latter part of the quotation would seem to emphasise that we cannot solve our problem by revising estimates of student numbers in a downward direction. The facts of life at the moment, however, force us away from new developments, at least in the sense of new buildings, since the capital allocation has also had to be drastically reduced. Where then do we find the solution?

8. It has to be said in this connection that the tendency towards increased students' fees, in the context, particularly, of our limited student support provision, must have some modifying effect on overall numbers of whole time students. Nevertheless, the effects of recession and limited exploymement prospects must exercise some pressure in a contrary direction. It would, accordingly, be unsafe, in my view, to estimate the overall demand for third level places at a lower figure than 60,000 by 1990, that is to say,

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about one-third higher than today. This would envisage an average increase of the order of 2,000 per annum over the next seven years.

9. In the nature of things much, if not practically all, of any such increase in numbers of students must be anticipated to occur in our newer and more technically orientated Institutions, and that without very much by way of increased capital provision. That in itself is a problem because all of them are working up to, if not beyond, accommodation and equipment limits, as these have been normally conceived heretofore. We now have necessarily to think in terms of radical innovation and new teaching technologies. Before going on to advert to possibilities in this regard may I indulge myself by entering one small personal caveat, namely, that I am not at all sure that times of recession do not require greater, rather than lesser, concentration on general education for adaptability and less, rather than greater, attention to practical skills which seem always to tend towards increasing specialisation. In this connection one has to think of higher education as a whole and it may well be that some spare capacity could be found in the short term, in our Colleges of Education for primary teachers, capacity which might be usable with existing staffs in a way very relevant to our future requirements.

10. The second element of our problem is the financial one. It is so important an element that one has to emphasise at all times that a solution to our numbers problem is no solution unless it is financially viable in the strictest sense. We need to keep reminding ourselves that neither on the capital side nor on the recurrent side do we possess any great leeway in the short, or even in the medium term. We have to keep our feet very firmly on the ground also in relation to ideas, no matter how august the sources, that new methods of financing can of themselves produce

salvation. We must be careful to identify the objective of policy in this regard:- is it, for example, simply a reduction of State commitment; does it on the other hand seek, for example, to improve participation by children of lower income families and, if so, will it achieve that? Above all we must remember that students in higher education are not all in Universities; nearly half of them nowadays are in other institutions whose methods of financing are already rather different anyway. Nevertheless, we must find some way to solve our financial problem, as well as our numbers problem. Theywon't go away.

Thinking the unthinkable!

11. That brings me to my final section for which I can find no more appropriate title than the above. Given the need to expand student numbers by a further one-third, and not being given the capital and current resources normally attributable, what does one do? In the original paper some possibilities were mentioned. It is now proposed to sharpen the focus on a number of those possibilities without any pretence, however, that they thereby become probabilities. There are certain Irish traditions of which one should never underestimate the intractability.

12. The first thing one naturally thinks of in this connection is new technology. It seems to be very clear that the HEA Committee on Educational Media, in conjunction with staffs in the Colleges, is going to have to give concentrated thought to this problem. It is not going to be simply a question of improving the present situation but rather of seeking to alter radically relationships between teacher and existing students so as to make it possible to cope with some additional students, and to do so without significant

additional capital and current cost. It is in this latter area, and also in the need to preserve standards in the process, that the challenge lies. I must say that, in my opinion, the scope for significant relief in this direction is not great. It is tempting to foresee the Distance Education project as a saviour in this context but it is fairly obvious that the immediate cost factor and the range of studies which would be involved would be prohibitive. One cannot afford, however, to rule out any possibility.

13. The second thing one has to look for is spare capacity. As I have already mentioned the possibility of finding this and being able to use it may well be greater - and perhaps even more relevant - on the arts/science side than on the more technical side. But we cannot rule out the latter side and we may have to think the unthinkable in the matter of additional use even over-use in the short run of such buildings and equipment as are available to us, in institutions such as the two NIHEs, in the Colleges of the Dublin Institute of Technology, and in the Regional Technical Colleges. Nor can we exclude the Universities from consideration in this regard - even to the extent of shared use of facilities in what one would, in normal times, regard as rest periods for machines and man. In fact, if one remembers the recent achievement of two university colleges in doubling their Engineering Facilities in response to manpower demands, one is not quite so conscious of thinking the unthinkable. Except that the problem this time will be to achieve the limited level of funding then made available!

14. The third thing, paradoxically, is people! Something like three-quarters of all our third level expenditure goes on staff. This is probably much

too high a percentage for the health of the non-pay sector of higher education expenditure:- maintenance, materials, books, etc. But it is the fact of life with which all our planning must reckon. Our numbers of staff are not noticeably extravagant; in fact our overall staff-student ratio is extremely low by international standards. But our indulgence in tenured posts, our desire to improve hours and conditions of work, and our addiction to broad-based and multi-pronged research, these three may well, in my opinion, have outrun our capacity to pay. They have certainly outrun our capacity to duplicate them in additional staff for the service of an additional 15,000 students. The consequence is clear, if unpalatable. Such extra resources as we can command simply must be used in a more economical and effective way. One such way has been mentioned in the original paper and may be repeated here:- a corps of, so to speak, technological aiders who would, I hope, be funded out of resources made available for Youth Employment or for Training schemes. But this is one area, the staffing area, in which we really have got to continue thinking the unthinkable - and to do so without depressing ourselves. We have increased our numbers of whole-time third level students six-fold in my official lifetime; why should one-third more be beyond our capacity over the next seven years?

NINTH IMPROVING UNIVERSITY TEACHING CONFERENCE

DUBLIN 6 - 9 JULY 1983

The Emerging Revolution in Education

Professor Tom Stonier
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Fellow Amateurs! University teaching is the last bastion of non-professionalism. We need follow no training, have no examinations or licenciates to qualify as a university lecturer. However, we better start becoming more professional because if we don't, not only will we lose public support (as has already happened in many countries), but increasingly, we will be upstaged by the new electronic information/communication devices.

I would like to ask you, just for my own information, could I please have a show of hands: How many people here have a home computer? Could I have a show of hands please? (About 15% of the audience raised their hands). That is more or less what I find in the UK I would estimate it is around 15%. Were I to ask this question of the 19th Annual Conference in 10 years, the chances are that virtually every hand would go up.

Just to illustrate that point, I beg your indulgence once more, and could I have a show of hands: How many people here have a pocket calculator? Could I have a show of hands, please? Now we see the vast majority of hands going up. Had I asked this question 10 years ago most of you would not know what I was talking about. Pocket calculators appeared in the US in late 1971, cost $240, were hand held but you had to have big pockets to stuff them in -- they could add, subtract, multiply and divide -- that was it. One would not have foreseen back in the early 1970s how rapidly that technology would spread around the world.

Pocket calculators came in to schools only after our culture was overwhelmed by them. The teaching profession had to give way kicking and screaming. The pocket calculators came into the home first. That is exactly how it is going to happen with the microcomputers.

Now if you don't mind, pull out from the blue folder the paper which says "Overview of Presentation". We will read the three paragraphs, take a deep breath, and go through it fast. I want you to have it because I am planning to go through Brian Champness's question. It is regretful that he is not here; he would have asked some very penetrating questions.

The Economic Rôle of Education in Post-Industrial Society

Education in its broadest application will become the number one enterprise in the post-industrial economies of the early 21st century. This will be true both as a measure of the share of the gross national product and as a percentage of the labour force employed.

Let me amplify that a bit: We are now in a post-industrial economy. A few hundred years ago we were in an agrarian economy; then we shifted to an industrial one; today, we are in an information economy. Three hundred years ago, it took 90% of the labour force to work on farms to feed the other 10%. In the US today only slightly over 2% work on farms, and they not only feed the other 98% in the US, they feed much of the rest of the world, to boot. This shrinkage in labour reflects the enormous increase in productivity brought about by advances in technology and increases in education levels.

That same process is now overtaking the manufacturing sector. From here on in, a very simple rule is going to operate. Those industrial concerns which do not automate and robotize will go out of business. Those that do will not provide jobs. There are already being planned the so-called factories of the future which require only two kinds of personnel: engineers, who know how to maintain and modify a robotized system, and security personnel. Such a plant is going up in the North of England, a textile plant. The blue collar work force will shrink. It will be replaced by engineers wearing white coats. The factory labour force of the future will be small and highly professional.

This is parallel to what has happened on US farms. The average American farmer has a university degree; many of them have masters degrees; they are agribusiness men sitting on top of a $2 million plant; they have to be mechanics to operate tractors and combine harvesters; they need to have knowledge of soils, of fertilisers, of hybrid seeds; they need to know how to haggle with grain speculators -- very often the price of a crop is paid before it is sown; they have to know about organising cooperatives if they want to hold back their crops until world prices are better; they have to be tax specialists and accountants. .... in other words they need to be able to handle a wide range of complex information. Farmers have become more like information operatives: When they do work, the chances are they may be in an air-conditioned cab listening to their transistor radios.

The shift is continuously upstream information-wise: The man with a shovel gets replaced by the man with a buildoser; the man with a sickle is replaced by the man with a combine harvester; the filing clerk gets displaced by somebody who runs a computer. We are continuously moving into evermore sophisticated information levels.

The reason for all this is that the most important single input into modern productive systems is no longer land, labour or capital -- it is information. When you know enough you can greatly reduce requirements for land, labour or capital. A skyscraper represents an example of knowledge displacing a requirement for land. Every time a robot displaces a worker you have an example of knowledge displacing labour. The late Chris Evans was always fond of saying: "Had the automobile industry made as much progress in 30 years as the computer industry, you would be able to buy Rolls Royce for £1.35, get 3 million miles to the gallon, and park six of them on a pinhead". If you look at the requirements for capital, energy or materials needed to produce a powerful computer, it becomes apparent that when you know enough, you can reduce any or all of them. That is why the bulk of the labour force today consists of information operatives; and that is why historically, education keeps growing. I think Mr O'Laoghaire has a right to be optimistic because those countries that do not expand their education system are going to be lost to the mainstream of history.

The Emerging New Education System

The new education system emerging will be a cradle to grave system with a strong shift, particularly for younger children, from school-based to home-based education. This will represent the first genuine revolution in education in about a century. A century ago, throughout the Western world, there was a revolution in education: We introduced mass education. Prior to that, education was for the elite only. But the classroom of today is merely an extension of the Victorian classroom. It is not really that different. Of course, you teach more subjects, the classroom is co-educational, the children stay in longer, and you don't hit the kids so much anymore. It is much more pleasant. However, in general, it is merely an extension of that 19th century classroom.

That is going to change in this decade. It will vary from country to country but, I would say, before this decade is out, it will become apparent to almost everyone, and this is how it is going to go:

At the base of the new education technology is the computer. Home computers have now come down in price. They are substantially less than a colour TV set, and they are beginning to sweep the market. Those economists who make it their business to forecast consumer affairs say that the next boom in Western consumerism will not centre on refrigerators, or TV sets -- they are practically saturated. Nor automobiles -- that is rapidly becoming saturated. The next boom will be in home electronic information and communication devices. The average middle class family, 10 years from now, will be spending about as much on these devices as it spends on a family car now. These devices will include not only home computers which will act as intelligent terminals via the telephone line (with luck maybe even by means of optical fibres) they will be coupled to sophisticated video equipment, hard copy devices (printers of various sorts); they will allow the home to become increasingly a work station and they will become the centre of an entirely new information technology. As the telephone becomes connected to mainframe databases (in Britain, for example, via the Prestel system), these terminals will be networked. Ten years from now, the chances are that you will be able to access the Library of Congress (the biggest library in the world), the British Museum, and if some of my other forecasts are correct, the Moscow Archives. It means that in your living room you will have information at your finger-tips which makes owning a first-rate encyclopedia look as primitive as owning a Victorian slate to scratch on. It is also going to mean that the average instructor is not going to be able to compete as a source of direct information.

Getting back to the home computers, there are several reasons why people have bought home computers. There were first of all, just plain computer buffs who liked anything and everything about computers, liked to play with them -- some of them may even have built their own. That was the group which predominated in the 1970s. Then there were some people who started bringing them home because they were using them at work. In the last few years, I would guess the major group of people who bought them were those parents who recognised, consciously or subconsciously, that computers were going to be important in this world and they wanted to give their children maximum advantage. So they bought a computer because they wanted the child to get used to it.

In truth at the moment there is not a lot you can do with a computer except learn how to use it. That is not to be sneered at. But if you are not dedicated to learning about computers, it's not much use. It is the main reason, I suspect, why the majority of you have not yet bought a home computer. This will change over the next two to three years. Education software is now becoming big business. You see, there is not much economic incentive if you are dealing with a few thousand or even a few ten thousand sets. However, when there are millions, then there is an economic incentive, and the importance of economic incentive is the difference between dedicated amateurs creating programs and professionals doing their stuff. There is a big difference!

Let me tell you what has been happening in the software area. It is this - most education software for micros was rubbish. Now I am not saying that some of the PLATO and some of the other mainframe and minicomputer stuff was bad, some of it was very good actually. But, it wasn't for micros. During the mid-nineteen seventies we saw one kind of rubbish: Stuff produced by the microcomputer manufacturers who wanted to flog the hardware. You would be lucky if you had an educator or teacher looking over the shoulder of the programmers. The programmers would be putting in stuff that they copied out of text books, it was drill and practice, it was the dreariest sort of stuff. It was a travesty of the use of computers. You were better off using pencil and paper, or chalk and a blackboard. So that was the first kind of rubbish.

Then there was a second kind of rubbish: Enthusiastic teachers, college instructors, etc. had become computer buffs, saw the potential, decided coming out is professional, user-friendly, software where you need to know almost nothing about computing to run it. It is crash-proof. It has a number of easy-to-work features, and it is beginning to get into the homes. ASK is currently working on a series in literacy: One begins teaching children shapes, nothing else, just shapes. This serves as an introduction to the shapes of letters, then words. These lead to other programs: the alphabet. .... short sentences. .... more complicated words. .... grammar. .... hints on speed reading and writing.

The computer is an incredibly powerful tool. It is so powerful we have not fully understood it yet. I will make a categoric statement: The computer is the most important invention for learning since the development of human speech. There is simply nothing in the history of pedagogy that approached the potential of the computer; the computer is a quasi-intelligent machine, able to do things which formally we could do only inside our heads. The advantages the computer provides, include the following:

1 The computer is interactive. Unlike books, tapes, films, radio and television, what happens next is largely determined by the user. This gives the child a sense of personal control. In addition, by eliciting a response and involving motor activity, the child becomes actively engaged in the learning process.

2 A personal computer can provide tailor-made instruction. Over the next few years, software, like hardware, will become sophisticated and cheap. A computer can provide individual tutoring and attention to a level not possible in most classroom situations.

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2 A personal computer can provide tailor-made instruction. Over the next few years, software, like hardware, will become sophisticated and cheap. A computer can provide individual tutoring and attention to a level not possible in most classroom situations.

3 A computer has infinite patience. It doesn't care how slowly the user responds or how often the user makes a mistake. One of the earliest extensive uses of computer-assisted learning occurred in Ontario in the late 1960s. It was designed to help an innumerate group of teenagers fulfil the math requirements for college courses. The program was successful from a number of points of view, not the least, exemplified by a girl who stated that the computer was the first math teacher that had never yelled at her.

4 The computer provides privacy. Children, or for that matter teachers, can make mistakes without anyone seeing them. It is easy to erase everything and start again.

5 Good programs never put the child down. Instead, good programs provide effective positive reinforcement.

6 As Seymour Papert has pointed out (Mindstorms, Harvester Press, 1980, p 114), working with computers favours a more positive attitude towards mistakes. Users designing new programs are not 'right' or 'wrong'. Rather they need to discover the 'bugs'. Mistakes are not something to be ashamed of, but to fix.

Learning about mistakes and how to correct them leads to new insights about processes. With sufficient experience children develop a new information skill: advanced problem-solving capabilities.

7 Papert has also pointed out (p 103) that pupils learn the skill of analysis by reducing complex problems to 'mind-sized bites'. "It is possible to build a large intellectual system without ever making a step that cannot be comprehended."

8 As an extension of that process, learning to program a computer tends to favour an organised intellectual approach to problems with flow charts, systems thinking, and 'logicacy'. Just as certain sports favour the development of co-ordination and particular muscles, so does working with the computer favour the development of certain intellectual faculties. Working with the computer, like crossword puzzles and chess, is 'mind play'.

9 Among other intellectual qualities, the computer fosters precision and attention to detail.

10 The ability of the computer to simulate a wide variety of processes such as chemical reactions, ecosystems, demographic or economic changes, means that it becomes possible to train students to think 'laterally' and across traditional boundaries. Whether training astronauts, top level managers, or chemistry students, the use of computer simulations is probably the most cost-effective method to educate decision makers.

11 Computers can provide more interesting and understandable material because of the ease of producing animated material. Because the child can create his/her own, it becomes possible to invoke the child's own creativity and imagination.

12 Because of these features, computers can provide opportunities for several users to work together, including pupils and teachers. The fun of it is that the learning experiences provide new situations not only for the students, but for the teachers as well.

The fact that computers exhibit infinite patience, and can be designed to insure privacy is particularly important for the disabled children, whether educationally disabled or culturally, physically or mentally handicapped. We have seen this with educationally subnormal (ESN) children who, when there is an adult in the room may behave very differently from when they are on their own. If they are together, they will talk to each other, they will explain things to each other, one sees peer teaching in a way that you just don't see under any other circumstances. A friend of mine who teaches at the secondary level was very down on computing. An arts background led him to view computers with great suspicion. However, after watching some ESN kids interacting for the first time, he changed his mind and bought one for his son. Another teacher, brought in his son who normally had difficulties in maintaining concentration for more than five or ten minutes. In contrast, in front of a computer he "played" happily with one of our spelling programs for over 45 minutes, and stopped only because his father had to leave. It has been said that the computer not only forgives you your mistakes, it forgets them. Of course, it doesn't really understand that it was a mistake in the first place.

I would make the bold forecast that given the rate of progress in computer pedagogy, by the turn of the century, probably much sooner, the average child of three, and certainly by four, will know how to read. Children will learn to read about as fast as they learn to talk. By the turn of the century in those parts of the world where these programs have come in, almost all 12-year olds will understand calculus. Think what this will mean for teaching in the tertiary sector.

The computer revolution in education will begin at the primary level. It will begin with young children. The reason it is going to begin there is two-fold: Firstly, it is educationally easiest, given the present technology of relatively small memories and inadequate (cheap) peripherals. The home machines coming out now (1983) have as standard

64K RAM. This is still rather limited although enormous compared with 10 years ago. Thus for technological reasons it is easier to design programs at the very young level. Secondly, there is a much bigger market there. Therefore commercial pressures will favour programs for the very young. But it will creep up. The revolution will rapidly spread to the secondary level. The tertiary education community, has a breathing space because it wont hit fully for 10/20 years, but then it will hit with a vengeance.

The kind of scenario I see for the secondary system goes something like this. It is a UK scenario for the mid-1980s. You have a middle-class parent who has a daughter, say "Mary", who has not done terribly well in maths, probably because when she was a young girl she was suddenly standing in front of the class with the teacher saying "What is eight times seven, Mary, come on, don't go red in the face, what is eight times seven?" And Mary just froze. The teacher is much too polite to say "Sit down dummy, George what is the answer?" but, in fact, with an imperious sweep perfectly understood within the Hominid signalling system, she gets the same sort of message and George, of course, gives the right answer. The best way for Mary to cope with this embarrassment psychologically is to say: "Maths is not for me", which is perfectly acceptable in our culture. So she struggles through from one test to the next, losing out all along, memorising just long enough to squeak through each exam. So it goes.

In Britain it is widely believed that children who do not do well on their 'O' level maths are going to be deprived of health and happiness. So Mary's parents are very concerned over this matter. It turns out that the Jones' who live down the street have a computer and are saying marvellous things about it and how it helped their boy wih his exams. So they buy a computer. Because geometry was what Mary was particularly weak in, her parents buy her "An introduction to Geometry". As Mary discovers, this program contains some elements of Papert's Logo; she learns, by programming a turtle, how to draw different figures and the relationship between the angles and sides of a polygon. She plays ping-pong as a basis for learning triangulations; and so on. Mary discovers two things, 1) it is fun and 2) she understands it. She is very encouraged and her parents, even more so.

So they buy "Intermediate Geometry" and Mary now really takes to the subject. In fact, because all these years she had harboured a resentment to the maths teachers, she is sort of getting mad: "I can understand this stuff all right, I'll show them!" Out of her own pocket-money, she buys "Advanced Geometry". And then "Know more than your Teacher Geometry". That's when the revolution hits!

That's what we are going to see from here on in: The kids are going to come into the classroom knowing more than their teachers That has already happened vis-a-vis computers. Up and down the country (and in other parts of the world) I hear the story over and over again, the kids are teaching the teachers. When it comes to computers the kids have two advantages, they don't have the hang-ups of teachers -- they don't have to maintain status, and kids have an infinite amount of time (or so it seems). They will be on that computer hour after hour, day after day. Before long they will run circles around their instructor, who has to make an honest living. I should tell you 80% of what I know about computers I learned from my students.

The world of the teacher is going to be entirely different in the future. Keeping in mind the enormous information resource which is going to be available in the home, and keeping in mind that the child which is now working with a computer is developing its own very substantial information skills and is also creating its own substantial data base, the function of the teacher of the future will be that of a "knowledge counsellor", an "information guide", or a "project director". Education will be tailor-made adapted to the student's own interests. The teacher's rôle will be supportive rather than central. A tutor rather than an instructor.

We are living amidst a wealth of information. We are living, in fact, in a surfeit of information. We cannot digest properly what there is. So no matter what we teach, whether we are teaching physics, economics, or history, there is by far more than we can cover. Student interest must be the prime concern. The success and efficiency with which material is learned, is a function of interest. Therefore, if a student is interested in an area, let him or her pursue it. Our function will be to be a colleague, we and the student will explore knowledge together. Our main contribution will be to make available our maturity and wisdom.

Summary

Education, in its broadest application, will become the number one enterprise in the post-industrial economies of the early 21st century. This will be true both as a measure of share of the Gross National Product expended and as a percentage of the labour force employed.

The new education system emerging will be a cradle-to-grave system with a strong shift, particularly for younger children, from school-based to home-based education. This will represent the first genuine revolution in education in about a century.

At the base of this imminent revolution is the computer. The present, mostly primitive, experiments in computer-assisted learning will expand rapidly during this decade to set the stage for computer-based education. Just as the book and printed material is central to a modern education system, so will education, early in the next century, be based on the computer and related electronic information/communication devices.

LIBERAL ARTS FOR THE MILITARY STUDENT: MILITARY BASE BACCALAUREATE PROGRAM AT COKER COLLEGE

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This paper will describe and evaluate one program for post-secondary education at a military installation, a program offered through the Education Center at Fort Jackson in South Carolina, and by Coker College, a small liberal arts institut-tion, located in the same state.

In the early 1970s, the U.S. Army discontinued a time-release program whereby Army personnel could attend classes full time on a college or university campus. After this, the Army sought to attract programs which would offer the baccalaureate degree on the military base itself and in a non-traditional time frame to accomodate the needs of military personnel. In response to enquiries made to Coker College by the Education Services Officer at the base, one such program was established. Begun in 1973, the college, for the past ten years, has offered a small baccalaureate program at Fort Jackson. The base is located in Columbia, South Carolina, about seventy-five miles from the parent campus, and is one of the nation's largest army recruit training centers. The center utilizes about five thousand permanent military personnel in providing basic training for army recruits.

Courses for credit offered off-campus by colleges and universities are not a new phenomenon to higher education in the United

States. However, the program at Fort Jackson is somewhat unique because of its similarity to the degree programs of the parent campus. The program, Coker-at-Jackson, represents for the college a shift in its educational market from a traditional campus environment to one responsive to the needs of a different consumer. The college's involvement in the program also represents another trend, the entrance of the small, private college into off-campus credit programs, an area which, until recent years, ha been considered the domain of public colleges and universities.

In discussing this program, several points will be covered: 1) a brief description of the program - the degrees and courses offered; 2) some matters of administration - the logistics of how the program works; 3) an examination of both the strengths and weaknesses which have been revealed over the ten-year period of the program's operation; and more broadly, 4) some general conclusions regarding off-campus credit programs, with primary emphasis upon the issue of quality.

Coker College is, itself, a small institution. From the beginning, therefore, it acknowledged limitations to the courses, activities and services that it could and should provide in any off-campus setting. The basic standard in setting up the program was that the functions, goals, and objectives of the military-base program be consistent with those of the parent campus. Since a separate degree program could not be offered, the program had to be integrated in on-campus operations both administratively and academically. It was decided to offer only two degrees, and the program, as it was set up, provides courses leading to a

Bachelor of Science degree in Business Management and/or a Bachelor of Arts degree in Social Science.

The program is open to all military personnel, dependents, and civilians employed on post. At least two years of college credit is preferable, but not necessary. Admission policies are consistent with the goals of the college. Students selected are reviewed by the same admission procedures and measured by the same admissions criteria, as are other applicants to the school. Once enrolled, the military student takes the same courses which the on-campus student takes. These courses are those required on campus for the two degrees of B.S. in Business Management and the B.A. in Social Science.

Courses at the military base are offered on an eight-week format. This allows the college to offer five eight-week terms during each calendar year and means that military personnel may enroll in ten (two each term) for thirty semester hours a year. To fulfill the college's residency requirements, the military student must complete his final thirty semester hours in Coker College courses. Although lower level courses are offered occasionally, most courses are at the upper level. A student must have thirty semester hours of upper level course work. Degree requirements as stated in the College Catalog must be fulfilled and all policies and requirements in the catalog are applicable to the Fort Jackson program.

The scheduling of classes is an important part of the college's planning for the military student. A majority of classes are scheduled in the early and late evening. One session meets from 1645 to 1900 hours and the other from 1900 to 2115 hours. Classes are held twice weekly. Students can and do enroll for two classes on the same evening. Occasionally a class is offered for a double period on one evening, on Saturday morning or during the lunch hour.

Additional support for military students is the wide range of testing possibilities at the base. Military students do not have to pay for these tests as this is part of the service available to them through the base's Education Center. The College follows the recommended American Council on Education guidelines for recognition for credit-for-testing in the following: (1) College Level Examination Program, General and Subject Examination, (2) Defense Activity for Non-Traditional Education Support, Subject College Level Examination, (3) Advanced Placement Examinations of the College Entrance Examination Board. The college also recognizes the transfer of credits from other approved colleges and universities (with a grade of C or higher) and accepts those approved by the American Council on Education from the U.S. Armed Forces Institute through 1974 and from the Army's Service school training and Military Occupation Specialty.

Administratively, an operation on a military base requires frequent contact with the campus. Originally, the college used a person from its own campus admissions office as 'military counselor.' During the first year or so of operation, this person spent two or three days a week at the base. However, in 1975 a full time administrative position, that of Director, was created and this person was made directly responsible to the college's Academic Dean. A full-time office is now located at the base and the Director supervises nearly all student service functions as on campus. His duties are three fold. First is that of public relations and recruitment of students. The most effective information recruitment source is word-of-mouth. However, advertisement and promotion are also made through various means: the Post Daily Bulletin and the base newspaper, on approved bulletin boards, special education flyers, and periodic briefings, as allowed and requested, with base leaders. Second, the Director works with both the **Army** and the Veterans' Administration in processing and filling out numerous required forms. He works with the Educational Counselors at the base's Education Center to complete forms for the student's military record, and maintains constant liaison with the college Registrar as each student's records are screened and evaluated. Third, the Director must be thoroughly familar with the college's academic programs and degree requirements. He is responsible for determining which courses are needed each term, for the scheduling of classes, securing professors, ordering books, etc.

The provision for an adequate and qualified faculty is essential to maintaining the academic quality of the program. In all cases, regular faculty or instructors approved by the academic departments have been used. The program requires a sensitivity both to academic standards and to the unique needs of the military student. The military student is usually older and more mature, better motivated and more career oriented and brings to the classroom a wider range of experience than the average campus student. However, the military student, like most adult students, is often frustrated by procedures; is excited about learning and highly motivated, but anxious about his abilities; is limited by job and family responsibilities which complicate his academic schedules; and often is at a turning point in his career, either entering or exiting the military or thinking about a career in the military.

It is for these reasons that faculty accustomed to a small campus environment are well suited as instructors in the program. Professors from a small college are conditioned to working in a highly personalized college atmosphere and to working closely with students. While they do not sacrifice academic standards, they are sensitive to the need to alleviate many initial adult fears about academia and are usually willing to devote additional time to advising and counseling. This is seen as one of the strengths of the program and is the reason, also, why emphasis is always placed upon the use of regular faculty rather than upon part-time and adjunct instructors.

The chart summarizes some statistics for the ten-year period in which the program has been in operation. It must be borne in mind that the program has always been a small one. One reason has been that only two degrees are offered, the B.S. in Business Management and the B.A. in Social Science. Another reason for the small enrollment is the cost of the program for the student.

COKER-AT-JACKSON

Baccalaureat Program at Fort Jackson (USA)

1973-1983

YEAR	NO. OF COURSES	ENROLLMENT	GRADUATES	FACULTY
1973-1974	25	77	27:B.S.-23 A.B.-4	7 regular
1974-1975	21	111	30: B.S-23 A.B.-13	12 regular
1975-1976	27	97	11: B.S.-5 A.B.-6	12 regular 1 adjunct
1976-1977	23	73	25: B.S.-14 A.B.-11	8 regular 2 adjunct
1977-1978	21	62	7: B.S.-7 A.B.-1	9 regular 3 adjunct
1978-1979	19	57	10: B.S.-4 A.B.-6	8 regular 2 adjunct
1979-1980	22	59	13: B.S.-4 A.B.-9	12 regular 2 adjunct
1980-1981	20	42	4: B.S.-2 A.B.-2	12 regular 2 adjunct
1981-1982	22	57	8: B.S.-4 A.B.-4	9 regular 3 adjunct
1982-1983	22	53	5: B.S.-3 A.B.-2	10 regular 2 adjunct

Coker College is a private institution and tuition costs are high in comparison to those charged by state schools which also operate programs on the base.

The opportunity to serve a military population requires a commitment that must be continually examined and the ten-year period of the program's existence has revealed both strengths and weaknesses. One fairly constant weakness is a lack of adequate facilities. Faculty must plan realistic assignments that still maintain the integrity of course work while coping with inaccessibility to library resources and required reading materials, inadequate classrooms, poor audio-visual equipment and a lack of lab equipment. Additional time and effort is often required to assure the adequacy of facilities or to make reasonable substitutions for their lack.

A second weakness, perhaps more evident in recent years with the Volunteer Army of the U.S., is the inadequate preparation and academic ability of entering students. With the varied and diverse credits acquired by military personnel, it is sometimes difficult to make sufficient evaluation of an entering student's competency for college-level work. However, this situation is often a temporary one, for the strong motivation of the average military student for whom retention and promotion are based, in part, on his academic performance often results in a progressive improvement in classroom performance.

A third weakness, or perhaps better, a handicap, of Coker College's program is its cost to the student. The fact that the tuition cost per course is nearly twice that for a course offer-

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ed by state schools operating on the base increases the difficulty of attracting qualified students to Coker's program.

A final weakness is that of limited faculty involvement. Faculty participation in the program is voluntary and many members from the parent campus are not interested in teaching at night nor in spending the considerable time necessary to commute to a location some distance from the campus.

There are, however, a number of strengths in this program. Course offerings are standard campus courses, not ones made up for a military setting. Of the faculty who do participate, most are full-time professors on the campus. They are accustomed to close involvement with students and, at the same time, are committed to academic accountability for all their students, military-based ones as well as those on the college campus. Because courses are taught on the base, the scheduling takes student needs into account. The small enrollment and the fact that only two majors are offered allow adjustment of course scheduling to specific student need. The time-frame in which classes are held, from 1645 hours to 2115 hours, also is accommodation to the need of the military base student. Further, the distribution requirements of the two degrees give some assurance of a liberal education versus that of technical vocational training.

Off-campus credit programs have come of age, and we can expect increasing opportunities for our colleges and universities to become involved in such programs. What has been discussed here is one institution's efforts to provide a quality degree program and the techniques it uses to program a military base. Some of what has been offered may be situational and the facts and opinions are not panacean. However, regardless of how an institution is organized for quality assurance for off-campus credit programs, the following principles are recommended. First, that the purpose of the institution clearly provide the basis for the institution to be involved in off-campus activities. Second, that the administrative organization of the institution provide for and accommodate the off campus activities by the regular administrative and academic leadership personnel of the school. Third, that the education program, curriculum and course content, offered in off-campus settings be appropriate to the regular academic program of the parent institution. Fourth, that regular faculty of the school should have the responsibility for course content, instruction and student evaluation. Fifth, that program evaluation for off campus activities be conducted on a regular basis and within the same system and by the same personnel responsible for the evaluation of the effectiveness of the educational program of the parent school. Finally, that policies and procedures related to all facets of off-campus educational programs be developed and approved through the regular academic and administrative processes of the parent institution.

Adherence to these principles will help assure the quality of programs offered in an off-campus mode, military or otherwise. They will also greatly enhance the value and utility of credits earned by the off-campus student. It is this that should be our primary concern, the value and the utility to the student of the education which is offered him.

THE FIELD SERVICE PROGRAM AT COKER COLLEGE

by Robert R. Simpson

Hartsville, South Carolina

Keeton and Tate tell us in their book, *Learning by Experience - What, Why, How*, that "the learning society is here. Among its striking features is a rapid growth in experiential learning programs." At Coker College the concept of experiential learning has a long history. The College established the Office of Field Service in February, 1972. It was designed "to complement classroom activities with practical experience in the field, to address manpower needs and stimulate creative problem-solving in the community, and to provide an environment which encourages life-planning and career decisions."

A Director of Field Service and Placement manages this experiential learning program. The Director acts as liaison between the student, the faculty member and the agency supervisor. The Director confers with the student desiring to initiate an internship, arranges an interview between the student and the potential agency supervisor, oversees the writing of a contract, and generally ensures a quality learning experience. At the end of the semester, the student and the agency supervisor complete internship evaluations. These evaluations and a copy of the contract are placed in the student's field service file and can also be documented on the student's permanent placement dossier.

Participating agencies vary according to needs and interests. A representative list for a given semester would include public and private schools, the local newspaper, radio and television stations, an alcohol and drug abuse center, churches, scout organizations, the city recreation department, a hospital, day care centers, and local industries and businesses.

[illegible] three types of sponsored internships for [illegible] departments of the College. The first is a [illegible] credit internship based on the philosophy of [illegible] Student Program. This one provides a link [illegible] seeking to serve the world around them and community [illegible] in need of help. Through it students are encouraged to explore career interests before they are locked into majors that might not prepare them for the type work they would like to pursue following graduation. A second internship is an experiential component of a course. Professors make intern requirements a part of a course in order to blend the theoretical aspect of the classroom with practical application. The third type internship is designed for credit - from 1 to 15 semester hours. This internship involves approximately 40 hours of on-site work for each hour of credit. Background investigation and writing assignments are supervised by the professor in charge. This internship is designed primarily for upper-classmen needing special experiences to reinforce a major. Often this one is selected by students to gain exposure to and experience in their anticipated career field.

Case studies more clearly demonstrate the three types of internships. The first type -- the volunteer internship -- has produced these examples in recent years: a communications major used her summer in an internship with Educational Radio in South Carolina's capital city. Following an overview of all departments she observed and eventually participated in interviewing and on-the-air broadcasting. Her daily responsibility was to reorganize the music album library but she gained valuable insight into the technical aspects of the business just by being there.

Another volunteer intern was a political science major considering a law career who worked in a large law office. He spent six hours each week researching, attending meetings with attorneys, observing their preparation for court and attending court with them.

A music major with a strong interest in musical instruments and high school band conducting completed an internship directed by the conductor of an award-winning high school band. The student aided in instruction, helped with rehearsals for competitions and generally observed the management of students in a large high school band.

Finally -- and this example illustrates the altruistic volunteer aspect of the voluntary internship as well as the career exploration aspect -- several physical education majors provided supervised activities for elementary school students while waiting for their bus to arrive each day.

None of the student interns in the case studies just mentioned received college credit for their participation. None received pay nor scholarship aid. Their only reward was the insights they gained into their potential careers and the satisfaction of making a small contribution towards community betterment.

The second type of internship -- which we shall call class required -- is the practical aspect of a college course. The professor determines the field work expected of students in a particular class and includes this in the course syllabus. The students arrange this appropriate field service through the Field Service Office, and the instructor determines the number of hours required for the field service component. All education majors, for example, must observe in public school class rooms and serve as teaching aides for 200 hours before beginning their practice teaching. These hours are documented in the field service contracts and evaluations.

Sociology majors are placed in such settings as departments of social services, mental health, vocational rehabilitation and other human service agencies. One student was assigned to the Social Worker for the local school system. The student followed her on her daily duties approximately nine hours a week, observing her process of interviewing families to obtain their social histories before services could be rendered. By the end of the term she was able to conduct her own interviews supervised by the case worker.

History majors have been placed with a nearby county historical society to conduct oral history interviews. These interviews were filed for future use as historical source material when an updated version of that county's history is written. This year the senior history majors were placed with the college archivist to help research and organize exhibits for the college's diamond jubilee anniversary. Some of their research findings appeared in the campus-wide newsletter in a feature appropriately called "Diamond Chips."

Psychology majors have been placed in counseling centers to work closely with the therapist or counselor. In these situations interns may observe at close range the techniques and procedures for working with different individuals and groups. The student may have gained these techniques and procedures only by theoretical knowledge gained by field service. Other psychology students have been placed with Boy and Girl Scouts, public school and recreation groups to observe child and adolescent behavior. Their observations and conclusions are usually required for a course paper.

The third and last type of internship at Coker College is the most sophisticated of all: the special topics internship. Conducted as a special course, this type provides the most advanced career exploration opportunities. For example, communications majors are able to work in nearby television stations where they test their skills in a realistic work setting. One communications major worked in a congressman's re-election campaign where he was involved in all aspects of the political process. Journalism students have an opportunity to write for the local by-weekly newspaper. Psychology majors have gained further experience by working with directors of drug abuse centers, mental health centers and a children's hospital. Physical education majors who do not plan teaching careers have particularly benefitted from special topic internships. One recently worked as a recreation therapist at a residential center for retarded persons. Other students have helped manage sports programs supervised by city recreation directors.

To evaluate a program of this nature one must consider both weaknesses and strengths. One weakness is that of numbers. Out of the current student body, about six percent of the students completed internships during the fall semester. Lack of time appears the major factor preventing greater participation. Another weakness is that, while most internships are undertaken to satisfy a professor's class requirement, not all courses are suited for experiential learning components. Because of Hartsville's rural setting and rather small population there are times when it is difficult to find the best placement for a student's needs. If a student is willing to go outside the immediate community, it is possible to improve the quality and scope of the internship experience. However, the town has several large companies, the usual human service agencies, and town resources whose administrators willingly provide placement for students.

In terms of strengths, the program complements the academic/theoretical aspect of higher education by offering an opportunity to learn in a realistic setting. Documentation of the experience affords the intern an advantage over the student who does not participate and provides an answer to the question: "how does a student gain experience for a job for which experience is desired?"

There is a growing interest in volunteer internships for career exploration as students realize the need for responsible selection of majors based on realistic career decisions.

While the smallness of the community has drawbacks, its size also allows for the building of close ties, a spirit of mutual dependency and support and for a minimum of "red tape" in the placement process.

A recent evaluation of the Coker College Field Service Program was made by Frank van Aalst, Dean of Career Develment, College of Charleston and correspondent for Experiential Education. He stated that the Coker program is significant in that it effectively combines community service contribution with integration of academic and career development. While other colleges located in relatively small communities have despaired, Coker's comprehensive program offers a worthwhile model.

COMPUTERS AND TELEVISION -
THE SCYLLA AND CHARYBDIS OF EDUCATIONAL TECHNOLOGY ?

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INTRODUCTION

Although this seminar has set itself the primary task of examining, inter alia, what we have learned from the trials and tribulations of computer assisted instruction, I believe that the inclusion of a few comments about the application of television in formal education could help us in our assessment of the past, the present and the future. In both cases I will be talking essentially about a level of application aspiring to that of a surrogate teacher, for this is where valuable knowledge has been gained apart from the fact that computers can teach numeracy and television can teach literacy.

The history of technology in education reminds me a bit of the wanderings of Odysseus after the Trojan war. With a few notable exceptions his travels cannot be placed with any certainty on the map because he popped in and out of fantasy. So too with the repeated claims that the development and introduction of new technology would improve the quality of teaching and learning. Few of these claims can be positioned with any degree of certainty. One of the greatest contributions which educational technology has inadvertently made to education is the repeated underlining of the worth of the individual - both as teacher and as student. The contributing factors for this should interest us and are worthy of discussion. I propose to search for some of them in the context of the technologically based learning experience.

Coming back to the wanderings of Odysseus, it is recorded that at one stage he had to pass through dangerous waters in what might have been the Straits of Messina. In order to do so he had to avoid twin perils, for in these waters there lurked opposite each other the monster Scylla and the whirlpool Charybdis. The danger lay, of course, in the risk of encountering the one while attempting to avoid the other. It has always struck me that the application of computers and television in education pose a similar type of threat - hence the title of this paper. We need to avoid, and proceed beyond, the interactive unreality of computers and the passive reality of television.

HISTORICAL PERSPECTIVE

The origins of computer assisted instruction date back to 1958 when the first projects got underway at the IBM Thomas J. Watson Research Centre, the System Development Corporation, and at Bolt, Beranak and Newman.[1] In 1959 the PLATO project commenced with a single terminal connected to the ILLIAC 1 - a 1952 vintage first generation computer built at the University of Illinois.[2] (It weighed five tons.) In the same year (1959) Crowder introduced the concept of branching into the programmed instruction movement which Skinner had started around 1954 by applying his fundamental research on animal behaviour to human learning. In 1956, Bloom's taxonomy in the cognitive domain was published and in 1962 Mager's famous little book on writing behavioural objectives appeared for the first time.[3] The work of Suppes at Stanford commenced in 1963.[4] The advent of computer assisted instruction took place at a time when the behaviouristic revolution in American psychology started by the work of Watson, Thorndike and others was well underway. Seen in this historical context it is not surprising that computer assisted instruction became a vehicle of behaviouristic learning theory since computers are tireless dispensers of reinforcement to hungry human pigeons. The turtles, representing in a sense the opposite end of the learning theory spectrum, only came into the picture in about 1970.[5] Logo has, however, not escaped the appropriation of the behaviourists.[6]

The origins of educational television are a bit more obscure because of the wide interpretation given to the term. It seems, though, as if Iowa State University can be credited with the first 'instructional' applications of television during the period 1932 - 1939.[7] The real growth of educational television only took place after the Second World War with the advent of educational broadcasting and, later, the appearance of the videotape recorder in 1955 and the closed circuit movement which followed it. Educational television, unlike computer assisted instruction, could not appeal to a coherent theoretical framework in order to interpret the self evident truth that people can learn from moving pictures and sound. Earlier claims that 'talking pictures' would deliver education into the promised land had not been fulfilled. The long history of film research dating back to as early as 1918 had produced inconclusive (some would say trivial) findings and, beyond a few empirical fragments, little insight into human learning had resulted.[8,9] Much research has since been, and continues to be, expended in attempting to isolate and verify some basic precepts that might contribute to an appropriate theoretical framework. At this time we do tentatively profess to understand some of the basic mechanisms involved in the human processing of audiovisual information.[10]

One noteworthy difference then between computer assisted instruction and educational television is that the one developed largely within a theoretical framework that is behaviouristic, while the other did not.

ANALYTICAL FRAMEWORK

In order to contrast further the major differences between these two powerful technologies I propose to view them as elements in a teaching and learning system. As such, we can distinguish between them (and, indeed between all other constituent elements) on the basis of their attributes and the human relationships, if any, that can be established with them during the learning experience.

Some attributes (in the case of both physical and human elements) are constants (or at least stable over periods of time) while others are variable, that is, they may change according to circumstances. Relationships, on the other hand, ideally attempt to describe the nature of the interaction between elements and present us with a conceptualisation of how the system as a whole functions. Without such a conceptualisation there is nothing to operate upon and, indeed, the pursuit of qualitative goals cannot really proceed.[11] Learning theories, in some cases, are such conceptualisations although they are not always interpreted within the framework which I have outlined. It is clearly far more difficult to posit the attributes and relationships of a human element such as a teacher, or learner, than it is for a physical element such as a computer or its accompanying software. I hesitate to summarise a decade or so of educational research in a few sentences but let me illustrate what I have just said by referring briefly to the deserving attention which the contemporary work on student learning is currently enjoying.[12] The essence of this research is that the context of learning as perceived by the student can affect the process of learning in a distinctive manner. Viewed in another way, this tells me that students, apart from possessing obvious attributes such as mass, sex, values, communicative ability, and so on, also possess other important intrinsic attributes to which descriptive labels can be assigned. These intrinsic attributes are intimately related to their perceptions of learning and, as a consequence of the attributes of other elements in the system, they can influence the nature of the learning process in a fundamental way.

When we admit computers and television as substantive elements of the learning experience they clearly contribute to, and perhaps even constitute, the context of that experience. They do so by virtue, firstly, of their intrinsic attributes as physical entities as well as the extrinsic attributes bestowed upon them by their associated software and, secondly, the nature of the relationships which the learner can establish with them. It is within this analytical framework, then, that we can view the contribution of computers and television to the context of the learning experience. Research effort (largely of a comparative nature) has traditionally attempted to establish causal relationships between context and outcomes in both affective and cognitive terms. In only a few isolated cases have observations and theories attempted to link context with process.[13]

DISTINGUISHING CHARACTERISTICS

Some of the attributes of the hardware associated with computer assisted instruction and educational television have changed dramatically in the last three decades. The same can be said of the software, for the software in both cases can only accomplish what the hardware can support and the gap between what the software was required to do and what it could do in terms of hardware was often disappointingly large.

Time, of course, has changed that. Computer assisted instruction is no longer a reflection of 'state of the art' hiccuping time sharing systems, of capricious scheduling algorithms, of inadequate magnetic core storage or chattering terminals. The first three generations of computers reflected the transition from valves, to transistors to integrated circuits. The transition into the present fourth generation is not as easily defined and the projected attributes of the next, fifth generation, can easily be mistaken for fantasy. Educational television no longer presents a flickering and not very crisp grey scale image of the world.

I only mention all this because it reflects the primitive technological context within which much of the so called research on the effectiveness of these technologies has been prosecuted. When we presume to speak, as we do today, of what we have learned from the 'successes' and 'failures' of the past I can personally see no point in appealing to research findings so coloured by technological obsoleteness that we could not reproduce them even if we raided the museums. We are left, then with the sobering unalterables.

Computers still hold out to us the cherished promise of the individualised learning experience. Computers can, furthermore, simulate our understanding of some phenomena in the real world by means of mathematical modelling as immortalised for me in PLATO's fruit fly software. Television can show us the world as it really is by dynamically combining moving pictures with synchronous sound - indeed for many television IS the real world. The problem with all this is that those aspects of the real world that computers can so patiently and efficiently simulate is not the real world as we see it. It is rather, a mathematical abstraction of it.

Examples of these abstractions in their most advanced (some would say worst) form can readily be found in the rows of interactive audiovisual juke boxes that line the gaming arcades. In their own limited portrayal of the world they have also, incidentally, solved the vexing problem of doing something intelligent with the user response, for the feedback they provide is unquestionably both relevant and diagnostic in a very direct sort of way. I do believe that we can learn something from the gaming arcades in this respect, because the credibility of computer assisted instruction rests on what is done with the student response within the knowledge structure of the subject and an overall conceptualisation of the learning process that includes what the student thinks and feels. Few teachers are aware of such a conceptualisation. The attributes of computers dictate that all of this understanding be converted into a stored program which is an abstraction in itself.

Computers and mathematics have a natural affinity for each other and although human learning is not yet a branch of applied mathematics it is noteworthy that successes in CAI applications have been claimed in subjects as apparently diverse as music, art, language and medicine - all of which, to a degree, apart from the pure and applied sciences themselves, are amenable to the creation of knowledge structures. Although some awe inspiring techniques for creating such structures have been advocated[14] it is my understanding that definitive attempts to do so have not yet fully succeeded - not even at an elementary level in pure mathematics.[15]

There are two more points that I would like to make here. The first is that it is intuitively absurd to suppose that a teacher can create the type of software abstraction I have referred to without any knowledge of programming languages. Those CAI programs that work, and work well, are abstract representations of algorithms. An algorithm in the general sense is not merely an elegant procedure for obtaining a solution to a problem. It reflects, on the part of its author, a creative and often unique insight into the problem being investigated. As such, its software representation deserves the study of other programmers whose insight can only benefit from such an experience.[16] Much contemporary software is, by consensus, of poor quality and it reflects the shortcomings of its authors. It is a pity, then, that some of the vendors of good proprietory software specifically bar examination of their source code. It is an even greater pity that facile interaction with menu-driven authoring languages reinforces so easily in people the delusion that they can succeed where others have failed.

My second point is that computers can also be used to gain a deeper insight into problems that are not fully understood which is one of the reasons people construct mathematical models. In the case of computer assisted instruction we can obviously observe the student at work. We can also utilise the basic principles of software measurement which might yield further insights into the complex processes under investigation. Software measurement can also assist in the validation of the knowledge structure. I am not aware of a single study in which this has been done.

In the case of educational television only some of these remarks hold true. A television program suggests an explicit knowledge structure presented in serial form and also contains, by virtue of redundancy, cuing, and other mechanisms, some assumptions about the learning process. The analagous analysis of successful television programs beyond this level borders on the impressionistic for it caters for the masses rather than the individual. It is not, on its own, an interactive medium and its attributes govern the relationships that the learner can establish with its unremitting and predetermined presentation of information. The learner, in the worst case, is reduced to a passive sponge whose integration and internalisation of audio-visual stimuli can only be established a posteriori. It's all a bit like bad lecturing - in fact, the recorded image of the talking head mimics the real thing very well. It is the passive reality of television that has dimmed the egalatarian vision of equal opportunity of access to the best teachers and the gifted experts. Experience has shown us that television needs people to relate the captured reality of its message to the diverse needs of the learner. It is noteworthy that in its most successful applications television has been integrated with a variety of other media as well, especially print.[17]

THE NEW TECHNOLOGY

The adoption of new technology in education characteristically outstrips our understanding of it. This phenomenon is not confined to the field of education and it is not necessarily an undesirable one. It does, however, pose some interesting questions for us. The boundaries between information processing, broadcast television and telecommunication are rapidly disappearing.[18] We are now facing the opportunities presented by videotex, telesoftware, digital television and the videodisc. I am not sure that it makes any sense to continue talking about the problems of computer assisted instruction and educational television as if they were separate and distinct technologies.

Consider for example, some of the attributes of the technology represented by the integration of computers and videodiscs. There is nothing new about the mass storage of addressable units of information that can be restructured to meet specific user requirements. This is the essence of digital information processing and it is what computers do very well. The difficulty in education, as I have mentioned, is that the information itself is limited in its capacity to portray the real world. The videodisc has changed this by introducing the concept of storing dynamic images of the real world in an audiovisual database that can be accessed randomly rather than sequentially. The storage of addressable units of audiovisual information that can be retrieved in any order has altered one of the most basic attributes of television - that of the unremitting presentation, in fixed order, of the audiovisual imagery. Being able to restructure the presentation of audiovisual information interactively constitutes an attribute which I would label as 'interactive reality'. It is what distinguishes this new, integrated technology from its constituent predecessors and it creates a new context for the technologically based learning experience.

We do not know what type of learning it will promote and we are unlikely to find out until such time as we proceed beyond classifying, counting and checking the appearance of the learner's responses. We need to experiment with knowledge structures and our fragmentary conceptualisation of the learning process. We need to design software that can reason in the domain being taught.

Perhaps we need more fantasy. Imagine cable television that is both menu- and interrupt-driven. Imagine talking to your television set - even carrying on a dialogue with it - and explaining what you would like to see next.

The Wandering Rocks await us.

NOTES AND REFERENCES

1. Pressman, I. (1970)
'Computer Assisted Instruction : A Survey'
IEEE Transactions on Education (E-13) 134-141

2. Alpert, D. and Bitzer, D.L. (1970)
'Advances in Computer-based Education'
Science (167) 1582-1590

3. Macdonald-Ross, M. (1969)
'Programmed Learning - A Decade of Development'
Int. J. Man-Machine Studies (1) 73-100

4. Suppes, P. (1975)
'Impact of Computers on Curriculum in the Schools and Universities' in
Lecarme, O. and Lewis, R. (1975) (eds)
Computers in Education 173-179
(Proceedings of the 2nd IFIP World Conference on Computers
in Education, September 1-5, Marseilles)
North-Holland

5. Papert, S. (1980)
Mindstorms
Harvester Press

6. Some Logo curriculum guides are presented in terms of behavioural
objectives, workbooks and multiple choice tests.
See editorial by Kelman, P. (1983)
'Seymour, Has Your Dream Come True?'
Classroom Computer News (3) 7

7. Saettler, P. (1968)
A History of instructional technology
McGraw-Hill

8. Hoban, C.F. (1942)
Focus on Learning
American Council on Education, Washington

9. Kanner, J.H. (1968)
'CAI - The new demonology?'
Datamation (Sept) 38-40

10. Dwyer, F.M. (1978) (ed.)
Instructional Communications and Research Reports (9), No.2, 45pp
Research and Theory Division, AECT

11. Meyer, J.H.F. (1981)
'Teaching Improvement - A Practical Conceptualisation'
Proceedings, 7th IUT Conference, July 15-18, Tsukuba, Japan, 292-300
University of Maryland

12. Gibbs, G. *et al* (1982)
'A review of the research of Ference Marton and the Goteborg Group :
A Phenomenological research perspective on learning'
Higher Education (11) 123-145

13. See, for example, the work of
Crandall, N.D. (1977) as reported *in*
Hallworth, H.J. and Brebner, A. (1980)
Computer Assisted Instruction in Schools : Achievements, Present Developments and Projections for the Future
A report presented to Alberta Education 236pp
ERIC report ED200187/IR009102

14. See, for example, the work of
Sunouchi, H. *et al* (1982)
'Instructional Structure Analysis applying Fuzzy Theory'
Proceedings, 8th IUT Conference, July 14-17, Berlin, 813-820
University of Maryland

15. See, for example, the work of
Pacios, M.L., *et al* (1981)
'Hierarchical graph of the concepts included in the contents of elementary school mathematics' *in*
Lewis, R. and Tagg, D. (1981) (eds)
Computers in Education 163-170
(*Proceedings* of the 3rd IFIP World Conference on Computers in Education, July 27-31, Lausanne)
North-Holland

16. For an extension of this argument into the recognition of 'idioms' see
Postma, S.W. and Laing, D. (1981)
'Programmers, Programmarians and Programmaticasters : On the training of'
ibid, 719-723

17. Hawkridge, D. and Robinson, J. (1982)
Organising Educational Broadcasting
The Unesco Press and Croom Helm

18. Woolfe, R. (1980)
VIDEOTEX
Heyden and Son

CURRENT PRACTICES IN EVALUATING TEACHING PERFORMANCE

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PROCEDURE

TO ASSURE THE WIDEST COVERAGE, THE ENTIRE POPULATION OF AMERICAN, 4-YEAR, UNDERGRADUATE, LIBERAL ARTS COLLEGES LISTED IN THE U.S. DEPARTMENT OF EDUCATION'S *EDUCATIONAL DIRECTORY* (1981-82) WAS SURVEYED. ONLY UNIVERSITY-RELATED LIBERAL ARTS COLLEGES WERE EXCLUDED SO AS TO REDUCE THE POPULATION TO MANAGEABLE SIZE.

OF THE 770 ACADEMIC DEANS RECEIVING THE QUESTIONNAIRE, 616 (80%) REPLIED WITH USABLE DATA. THIS UNUSUALLY HIGH RATE OF RESPONSE SUGGESTS THE IMPORTANCE AND CONCERN ATTACHED BY THE DEANS TO THE MATTER OF EVALUATING FACULTY PERFORMANCE.

THE QUESTIONNAIRE USED IN THE STUDY WAS ORIGINALLY DEVELOPED AND USED BY THE AMERICAN COUNCIL ON EDUCATION (1967) AND WAS LATER REVISED BY THE EDUCATIONAL TESTING SERVICE (1977) AND THE WRITER (1978). IT WAS DESIGNED TO OBTAIN INFORMATION ON CURRENT POLICIES AND PRACTICES IN EVALUATING FACULTY PERFORMANCE FOR PURPOSES OF TENURE, PROMOTION IN RANK, SALARY INCREASE AND RETENTION.

THE QUESTIONS AND ANSWER CHOICES WERE IDENTICAL TO THOSE INCLUDED IN THE EARLIER STUDY BY THE WRITER. THE POPULATION OF THIS STUDY AND THAT OF THE EARLIER ONE ARE VIRTUALLY IDENTICAL.

NOTE: THIS PAPER HAS BEEN ADAPTED FROM A LARGER STUDY WHICH WILL BE INCLUDED IN A BOOK BY THE WRITER TO BE PUBLISHED BY JOSSEY BASS IN SPRING, 1984.

FINDINGS

NEARLY ALL LIBERAL ARTS COLLEGES - BOTH PRIVATE AND PUBLIC - CITE CLASSROOM TEACHING EFFECTIVENESS AS THE SINGLE MOST IMPORTANT FACTOR IN FACULTY EVALUATION. IT IS ESPECIALLY IMPORTANT THEN TO KNOW JUST WHAT KIND OF INFORMATION IS BEING USED TO ASSESS THIS EFFECTIVENESS.

TABLE 1 SHOWS THE FREQUENCY WITH WHICH THE DEANS OF LIBERAL ARTS COLLEGES CITE A SOURCE OF INFORMATION AS "ALWAYS USED,' AND COMPARES THIS FREQUENCY WITH THE 1978 STUDY.

TABLE 1

EXAMINATION OF THE TABLE REVEALS THAT THERE HAVE BEEN SOME SIGNIFICANT CHANGES IN THE SOURCES OF INFORMATION USED TO APPRAISE TEACHING PERFORMANCE. OF THE FIFTEEN SOURCES FIVE CHANGED BY 5 PERCENTAGE POINTS OR MORE AND, SIGNIFICANTLY, EACH CHANGED IN THE SAME DIRECTION AND IS MORE WIDELY USED TODAY. THE TREND IS EVIDENT: INFORMATION GATHERING IS MUCH MORE SYSTEMATIC AND STRUCTURED TODAY. AND MANY INSTITUTIONS ARE MAKING CONCERTED EFFORTS TO FORMALIZE AND SHORE UP THEIR EVALUATIVE METHODS.

WHAT ARE THE INFORMATIONAL SOURCES USED TO DETERMINE A PROFESSOR'S COMPETENCY AS A CLASSROOM TEACHER?

MOST FREQUENTLY CITED ARE EVALUATIONS BY DEPARTMENT CHAIRMAN AND DEANS. THE IMPORTANCE OF ADMINISTRATORS IN ASSESSING TEACHING PERFORMANCE PERSISTS. CHAIRMAN ARE STILL MENTIONED AS A SOURCE OF INFORMATION MORE FREQUENTLY THAN DEANS BUT NOW THE GAP BETWEEN THEM HAS WIDENED FROM 3.4 PERCENTAGE POINTS IN THE EARLIER STUDY TO 6.3 PERCENTAGE POINTS TODAY.

IT IS QUITE POSSIBLE - EVEN LIKELY - THAT ACADEMIC ADMINISTRATORS DO MAKE "PROPER" DECISIONS. AN ANALOGOUS SITUATION

TABLE 1

LIBERAL ARTS COLLEGES CITING SOURCES OF INFORMATION AS ALWAYS USED IN EVALUATING TEACHING PERFORMANCE, 1978 AND 1983

SOURCES OF INFORMATION	1978 (N=680) % ALWAYS USED	1983 (N=616) % ALWAYS USED
SYSTEMATIC STUDENT RATINGS	54.8	67.5
INFORMAL STUDENT OPINION	15.2	11.5
CLASSROOM VISITS	14.3	19.8
COLLEAGUES' OPINIONS	42.7	43.3
SCHOLARLY RESEARCH & PUBLICATION	19.9	27.3
STUDENT EXAMINATION PERFORMANCE	2.7	[illegible]
CHAIRMAN EVALUATION	80.3	81.3
DEAN EVALUATION	76.9	75.0
COURSE SYLLABI AND EXAMS	13.9	20.1
LONG-TERM FOLLOW-UP STUDENTS	2.2	3.4
ENROLLMENT IN ELECTIVE COURSES	2.7	1.1
ALUMNI OPINIONS	3.4	3.9
COMMITTEE EVALUATION	46.6	46.1
GRADE DISTRIBUTION	2.1	4.5
SELF-EVALUATION OR REPORT	36.6	41.9

EXISTS IN CLINICAL MEDICINE WHERE EXPERIENCED PHYSICIANS CAN AND DO RESPOND TO SUBTLE CLUES AND ARRIVE AT CORRECT DIAGNOSES. THEY THEMSELVES ARE OFTEN UNABLE TO EXPLAIN HOW THEY DO IT.

ADMINISTRATORS HAVE IMMEDIATE ACCESS TO THE FACTS ABOUT A PROFESSOR'S COURSE LOAD AND STUDENT ENROLLEMENT. BUT, UNLESS THEY PERSONALLY VISIT THE CLASSROOM OR DIRECTLY EXAMINE INSTRUCTIONAL MATERIALS, CHAIRMAN AND DEANS MUST RELY ON OTHER SOURCES TO PROVIDE THE BASIS FOR THEIR ADMINSITRATIVE JUDGMENTS ABOUT TEACHING COMPETENCE.

PERHAPS IT IS THE ABILITY OF CHAIRMEN AND DEANS TO MAKE WHAT AT LEAST THE MAJORITY OF THEIR FACULTY MEMBERS REGARD AS CORRECT JUDGMENTS THAT PERMITS THEM TO SURVIVE AND PROSPER IN OFFICE. THEIR JUDGMENTS MAY NOT ONLY BE PERCEIVED AS EQUITABLE BUT MAY ACTUALLY BE SO. PERHAPS. BUT THE KEY QUESTION IS THIS:
WHAT KINDS OF INFORMATION DO ADMINISTRATORS USE IN MAKING THEIR JUDGMENTS?

IT SEEMS LIKELY THAT ADMINISTRATORS RELY IN PART ON FACULTY COMMITTEES FOR DATA ON FACULTY PERFORMANCE.

IN MANY LIBERAL ARTS COLLEGES, FORMAL FACULTY COMMITTEES CONTINUE TO PLAY A MAJOR ROLE IN ACADEMIC PERSONNEL DECISIONS. COMMITTEE EVALUATION WAS "ALWAYS USED" IN EVALUATING TEACHING PERFORMANCE BY 46.1 PERCENT OF THE INSTITUTIONS, ABOUT THE SAME FIGURE CITED IN THE EARLIER STUDY.

THE CHRONIC QUESTION PERSISTS ABOUT FACULTY COMMITTEES, CHAIRMAN AND DEANS. WHAT IS THE BASIS OF THEIR DECISIONS? HOW SOUND IS THEIR INFORMATION?

IT SEEMS PROBABLE THAT IMPRESSIONS OF TEACHING COMPETENCE

ARE DERIVED, AT LEAST IN PART, FROM THE PROFESSOR'S SCHOLARLY RESEARCH AND PUBLICATION. THE PERCENTAGE OF DEANS CITING THIS SOURCE OF INFORMATION ON TEACHING HAS INCREASED AND NOW MORE THAN ONE DEAN IN FOUR ACKNOWLEDGES THAT RESEARCH AND PUBLICATION IS "ALWAYS USED" TO EVALUATE TEACHING. IT MAY BE JUSTIFIABLE TO JUDGE A PROFESSOR'S TEACHING ON THE BASIS OF PUBLICATION, BUT ONLY IF SUCH PUBLICATION OFFERS INSIGHT INTO THAT PROFESSOR'S TEACHING COMPETENCY. BUT THE NUMBER OF TEXTBOOKS, JOURNAL ARTICLES AND MONOGRAPHS ACTUALLY OFFERING SUCH INSIGHTS IS FEW.

THERE IS COMPELLING EVIDENCE TO SUGGEST THAT ADMINISTRATORS AND FACULTY COMMITTEES LEAN HEAVILY ON SYSTEMATIC STUDENT RATINGS IN THE FORMATION OF THEIR OWN JUDGMENTS OF TEACHING COMPETENCY. THE USE OF WRITTEN, FORMAL STUDENT RATINGS JUMPED DRAMATICALLY BETWEEN 1978 AND 1983. AND TODAY, FOR PERHAPS THE FIRST TIME, STUDENT RATINGS INFLUENCE PERSONNEL DECISIONS AT MORE THAN TWO/THIRDS OF AMERICAN COLLEGES. WITHOUT DOUBT, STUDENTS ARE AN INCREASINGLY POWERFUL SOURCE OF INFORMATION IN APPRAISING TEACHING PERFORMANCE.

THIS SHIFT OF POSITION IS ALSO INDICATED IN THE T-TESTS OF DIFFERENCES IN MEAN SCORES OF SOURCES OF INFORMATION CONSIDERED IN EVALUATING TEACHING PERFORMANCE, AS REPORTED IN TABLE 2.

TABLE 2

ANALYSIS OF THE DATA INDICATES SIGNIFICANT DIFFERENCES AT THE .01 LEVEL OF CONFIDENCE BETWEEN THE MEAN SCORES OF THREE SOURCES OF INFORMATION IN THE 1978 AND 1983 STUDIES. THE THREE ARE SYSTEMATIC STUDENT RATINGS, CLASSROOM VISITS AND COURSE SYLLABI AND EXAMINATIONS.

TABLE 2

T-TESTS OF DIFFERENCES IN MEAN SCORES OF SOURCES OF INFORMATION CONSIDERED IN LIBERAL ARTS COLLEGES IN EVALUATING TEACHING PERFORMANCE, 1978 AND 1983

SOURCES OF INFORMATION	1978 (N=680)	1983 (N=616)	
	MEAN SCORE	MEAN SCORE	t
SYSTEMATIC STUDENT RATINGS	1.64	1.44	4.46**
INFORMAL STUDENT OPINIONS	2.31	2.41	-2.03*
CLASSROOM VISITS	2.67	2.43	4.60**
COLLEAGUES' OPINIONS	1.73	1.71	0.47
SCHOLARLY RESEARCH AND PUBLICATION	2.34	2.23	1.90
STUDENT EXAMINATION PERFORMANCE	3.08	3.03	1.20
CHAIRMAN EVALUATION	1.27	1.26	0.15
DEAN EVALUATION	1.32	1.36	-1.18
COURSE SYLLABI AND EXAMINATIONS	2.41	2.22	4.23**
LONG-TERM FOLLOW-UP OF STUDENTS	3.16	3.15	0.48
ENROLLMENT IN ELECTIVE COURSES	3.04	3.12	-2.02*
ALUMNI OPINIONS	3.06	3.08	-0.63
COMMITTEE EVALUATIONS	2.06	2.06	-0.10
GRADE DISTRIBUTIONS	3.12	3.07	0.90
SELF-EVALUATION OR REPORT	2.08	1.96	2.02*

The test used was a t-test for differences in independent proportions.
* significant at .05 level of confidence
** significant at .01 level of confidence

THE USE OF CLASSROOM VISITS HAS EXPANDED IN RECENT YEARS. THIS RAPID GROWTH HAS ALSO EXACERBATED THE CONFLICT OVER THEIR VALUE. TYPICAL WAS THE COMMENT OF A DEAN FROM A MASSACHUSETTS COLLEGE: "THE ONLY TRUE WAY TO KNOW HOW A PROFESSOR TEACHES IS TO SEE HIM IN ACTION. CLASSROOM VISITATION IS MANDATORY AT OUR COLLEGE." THE DEAN OF AN ILLINOIS WROTE BLUNTLY: "CLASSROOM VISITATION HAS NO VALUE."

IMPRESSIONS OF TEACHING ARE INCREASINGLY DERIVED FROM ANALYSIS OF COURSE SYLLABI AND EXAMINATIONS. CENTRAL TO THIS APPROACH IS WHETHER SUCH INSTRUCTIONAL MATERIALS ARE CURRENT, RELEVANT AND SUITABLE TO THE COURSE. ALTHOUGH STILL NOT WIDELY PREVELANT AS AN APPROACH, THE RISING USE OF HANDOUTS, READING LISTS, HOMEWORK ASSIGNMENTS AND STUDENT-LEARNING EXPERIENCES TO APPRAISE TEACHING COMPETENCY IS CONSISTENT WITH THE TREND TO MORE STRUCTURED INFORMATION GATHERING.

FURTHER ANALYSIS OF THE DATA IN TABLE 2 INDICATES SIGNIFICANT DIFFERENCE AT THE .05 LEVEL OF CONFIDENCE BETWEEN THE MEAN SCORES OF THREE SOURCES OF INFORMATION IN 1978 AND 1983. THEY ARE: INFORMAL STUDENT OPINIONS, ENROLLMENT IN ELECTIVE COURSES, AND SELF-EVALUATION OF REPORT.

IT IS NOT SURPRISING THAT RELIANCE ON INFORMAL STUDENT OPINION HAS DECLINED. SUCH DATA WAS GATHERED IN THE PAST AS SCRAPS OF INFORMATION IN CHANCE MEETINGS WITH STUDENTS. BUT THAT APPROACH HAS BEEN SUPPLANTED BY THE MORE SYSTEMATIC TECHNIQUE USED TODAY TO OBTAIN STUDENT RATINGS.

IN ASSESSING TEACHING PERFORMANCE, SELF-EVALUATION IS MORE WIDELY USED TODAY. THIS SIGNIFIES THE GROWING RECOGNITION BY

LIBERAL ARTS COLLEGES THAT FACULTY MEMBERS THEMSELVES SHOULD BE PART OF A MULTI-SOURCE INFORMATION SYSTEM ON TEACHING PERFORMANCE. PROFESSORS CAN - AND DO - PROVIDE INSIGHTS, NOT ONLY INTO THEIR OWN COURSE AND INSTRUCTIONAL OBJECTIVES, BUT ALSO INTO THEIR TEACHING BEHAVIOR.

HOWEVER, DESPITE ITS IMPRESSIVE GROWTH, SELF-EVALUATION AS A TOOL FOR PERSONNEL DECISIONS REMAINS CONTROVERSIAL. IN SUPPORT, AN OREGON DEAN NOTED: "SELF-EVALUATION IS THE KEYSTONE IN OUR TEACHER APPRAISAL SYSTEM." IN OPPOSITION, A NEW JERSEY DEAN VOICED THE COMMON COMPLAINT THAT SELF-EVALUATION TENDS TO BE SELF-SERVING: "ANYONE BEING CONSIDERED FOR TENURE OR PROMOTION IN RANK IS SURE TO PROVIDE A SELF-APPRAISAL THAT PORTRAYS THEM AS THE GREATEST THING SINCE SLICED BREAD."

SUMMARY

THE STUDY FINDINGS INDICATE THAT THE PROCESS OF EVALUATING TEACHING IS BECOMING MORE STRUCTURED AND SYSTEMATIC. MORE DATA SOURCES ARE BEING INTRODUCED AND THE ASSESSMENT PROCEDURES ARE MORE OPEN. NEW DATA SOURCES ARE EMERGING IN IMPORTANCE. IT SEEMS LIKELY THAT LIBERAL ARTS COLLEGES ARE CASTING A WIDER NET IN AN ATTEMPT TO INCREASE THE RANGE AND RELIABILITY OF THE DATA THEY GATHER FOR PURPOSES OF PERSONNEL DECISIONS.

THE FAIR USE OF STUDENT RATINGS[1]

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We are all very much aware of the steady increase in the use of student ratings of instruction during the past decade. Along with the increase has been a shift in how they are used. Whereas instructional improvement (formative evaluation) was the primary use of the ratings ten or fifteen years ago, it has become increasingly common for colleges or departments to consider them also in tenure, promotion or salary decisions. It's safe to say that for either purpose there have been too many instances of misuse or misinterpretation. Needed, it seems, are formal standards or guidelines to help institutions and faculty members better understand the appropriate applications and the limitations of student ratings.

I'd like to describe an effort to produce a set of guidelines in which I've been involved. The guidelines (or suggestions in some instances) were based largely on what we've learned from the accumulation of research evidence; common sense and experience with various evaluation programs also played a role. The guidelines are not etched in stone so one of my purposes in discussing them here is to elicit your reactions and suggestions.

Some Current Guidelines

In 1979, I published a preliminary set of recommendations for the use of student ratings in a Jossey-Bass book titled Determining Faculty Effectiveness. The list was subsequently revised with the considerable help of a committee of seven faculty members and administrators. ETS published those revised guidelines last year.

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[1] Talk given at the Ninth International Conference on Improving University Teaching Dublin, Ireland, July 1983.

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The Fair Use of Student Ratings cont'd.

Following is an abbreviated summary of the guideline recommendations (in quotes) along with my comments on the rationale for each.[2]

1. Use Multiple Sources of Information

"For whatever purpose the results may be used, it is critical to keep in mind that student instructional ratings represent only one source of information about teaching performance. Other information about teaching, in addition to student opinion, also should be included."

This has become almost a truism for the evaluation of instruction. It's the notion of triangulation of data applied to evaluation. Students provide only one point of view about an instructor's effectiveness; therefore, other sources of information, such as peer ratings and estimates of student learning, need to be considered as well. Unfortunately, it's often harder to collect and quantify information from these other sources; hence the colleges may often put excessive weight on student views when making summative evaluations. For that reason, the remaining guidelines become even more critical.

2. Use Multiple Sets of Student Ratings

"A pattern of ratings over time is the best estimate of instructor effectiveness as seen by students. Ratings from only one course or from one term may not fairly represent a teacher's performance (although, for course improvement, ratings from a single course can be useful). For personnel decisions, it is essential to examine rating trends or patterns over time."

Although the instructor is the major source of variance in ratings, the effects of the course and possible improvements over time, especially after the first year of teaching, can be considerable.

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[2] For a complete set of the guidelines you can write to me or to the Institutional Research Program for Higher Education, Educational Testing Service, Princeton, NJ 08541.

3. Obtain a Sufficient Number of Student Raters

"The reliability of the items depends on having a sufficient number of students responding in order to reduce the effects of a few divergent raters. The proportion of a class that rates an instructor also is important. If over a third are absent or choose not to respond, the results may not be representative of the class."

This, of course, is the issue of rater reliability. Too few raters, or too small a proportion of the class responding, may not result in representative mean responses. Guidelines 2 and 3 are both related to the generalizability of instructional ratings.

4. Take Into Account Course Characteristics

"A few course characteristics appear to affect ratings and should be taken into account by reference to appropriate comparative data or in other ways. Small classes (that is, under 15) often receive more favorable ratings than larger classes, perhaps deservedly, since they often provide a better learning environment. Courses required by the college that are not part of a student's major or minor field tend to receive somewhat lower ratings than other courses. Ratings also may differ because of the subject field of the course."

Hundreds of studies have demonstrated that most course characteristics are unrelated to ratings. A few appear to have some affect, however, and taken together they could be significant.

5. Rely More on Global Ratings Than on Other Items for Personnel Decisions

"Overall ratings of the teacher or the course tend to correlate higher with student learning scores in a course than do other items or factors. Decision makers, therefore, should focus initially on the overall evaluation items. Other items and factors, which are useful for diagnosing teacher or course strengths and weaknesses, are important for improvement purposes and for interpreting the overall ratings in personnel decisions."

Overall evaluation items (e.g., how effective was the teacher) serve as a better proxy measure of student learning than those items which reflect the different strengths or teaching style of an instructor. Of course, an instructor's overall ratings should be reflected in at least some of the diagnostic items or factor ratings.

6. Supplement Diagnostic Information for Teaching Improvement

"Although studies have shown that many teachers can make appropriate instructional adjustments after receiving rating results, some teachers may not know how to change their instruction. Instructional development or counseling services can help teachers who want to do something about weaknesses indicated by poor ratings."

Unfortunately, budget constraints have caused many colleges to curtail instructional improvement programs. This guideline helps to make administrators aware that a student rating program is not a substitute for an instructional improvement or faculty development service.

7. Use Comparative Data

"Since student ratings typically tend to be favorable, comparative data (both national and appropriate local data) provide a context within which teachers and others can interpret individual reports. In making comparisons, it is important to look at the distribution of students' responses in each class as well as at means and deciles, and not to overinterpret small differences."

I'm most uneasy about this guideline. If a college has truly outstanding teachers, local comparative data will be to the disadvantage of some instructors. Perhaps colleges need to apply a "criterion-referenced" interpretation as well to student ratings and this guideline might be amended to encourage both kinds of interpretations.

8. Employ Standardized Procedures for Administering the Forms in Each Class

"When the results will be used in personnel decisions, it is critical to employ standardized administrative procedures. Although each institution will want to develop its own method, one possibility is to have a student, another faculty member, or someone other than the teacher involved distribute, collect, and return questionnaires in a sealed envelope. Mailing forms to students usually results in a poor response rate. The teacher should not be present during the process and, to further standardize procedures, the timing should be concentrated in the last week or two of class. Instructors might best be given the results only after grades for the course have been reported."

The instructor's presence or comments to students can affect ratings. The procedures suggested help minimize (a) the possibility of ratings affecting grades, and (b) tampering with responses.

9. Do Not Overuse Rating Forms

"If student ratings are collected in every course every term, students can get bored and may respond haphazardly or not at all. Faculty members may resent the lost class time and also may pay less attention to the results. They may also be less inclined to experiment freely in instruction if the results are used for personnel decisions each time."

A proper balance is needed between the need for external evaluation and the need for the instructor to experiment and improve his/her techniques.

As mentioned earlier, these nine guidelines are not meant as a complete or unalterable list. In particular, each college that uses student ratings may well want to modify some of the guidelines for their own purposes.

METHODS OF EVALUATING TEACHING

Mei-fei Elrick

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Use of student opinion to evaluate teaching is widespread in universities in Canada and the United States. Using this method exclusively, however, is now being questioned. Scriven (1967) says both teachers and students become anxious when an evaluation is used to make decisions which far exceed its reliability or comprehensiveness. Two methods which might be used in a more comprehensive evaluation are classroom visits and self evaluation. A discussion of these and a brief overview of the evaluation of teaching in Canadian universities follows.

Classroom Visits

When a university considers methods for evaluation of teaching (in addition to use of student questionnaires), classroom visits by colleagues and administrators are usually the first mentioned. This could stem from the understanding that teaching happens _in_ the classroom. The method is suspect because colleagues are known to rate instructors even more generously than do students (who are known to be generous). Centra (1980) suggests:

> [R]atings based primarily on classroom observation would not be sufficiently reliable to use in making tenure, promotion, and salary decisions - or would require investing more time in visitations or in training sessions.

Since the students are in the classroom more often than any administrator or colleague and are able to evaluate some aspects of classroom instruction, it seems an unnecessary duplication of effort. What students are not able to evaluate and what visits by colleagues and administrators could provide, is information on how current the individual is in his or her discipline. However, this might be accomplished more easily by colleagues' reviewing of the text, outlines, handouts, examinations and assignments of a course.

Because colleagues evaluate one another generously, it might be thought they would wish that method utilized; however, this is not the case. Bergquist and Phillips (1975) suggest trust is the factor with which the university must deal when colleague evaluations are considered. Murray (1980) concludes:

> In summary, available evidence indicates that, in comparison to student ratings, colleague evaluations, based on classroom visitation, are low in reliability and high in faculty opposition.

Self Evaluation

Self evaluation occurs constantly. Incorporating it into an evaluation of teaching may seem self-serving and, in a workshop on the comprehensive evaluation of teaching, faculty became mildly hysterical at the thought of using self evaluation for promotion, tenure and merit decisions. Their response may have stemmed from the realization that academics' perceptions of themselves do not agree with those held by others. Cross (1977) found, in a study she did at the University of Nebraska, 94 per cent of faculty think they are above-average teachers, and 68 per cent rank themselves in the top quarter on teaching performance. She adds, "Though they are not quite as pleased with their colleagues as themselves, 60 per cent are satisfied with the quality of undergraduate instruction in their departments; only 5 per cent are dissatisfied most of the time." Several other studies, Clark and Blackburn (1973), and Centra (1972), find faculty consistently over-rate themselves on teaching effectiveness. Blackburn and Clark(1975) add:

> Self ratings on the same performance dimension show only slight agreement with ratings made by faculty colleagues and almost no relationship with judgments made by administrators.

Seldin (1975), says self evaluations are used in 20 per cent of liberal arts colleges in the United States, and that number has increased. In his review of the literature he finds some authors see self-evaluation as important because it sensitizes the individual to what is happening within him/herself and others. Other authors find self evaluation so problematic they do not include it as one part of a comprehensive evaluation.

While there are certainly problems with self evaluation, it is important because it enables the individual to indicate how his/her teaching is progressing. Although this might seem more like a self report than self evaluation, it is evaluative since the individual makes decisions about its content.

It is also important that the individual evaluate him-herself on the same measures as do students and colleagues in order to establish if there are discrepancies between his/her perceptions and those of others. If there is a discrepancy or "gap", as Gaff (1975) calls it, it may provide an impetus for change. He says, "Development in adults requires self-examination aimed at self insight. Mechanistic or 'cook-book' approaches do not work."

Boud (1980) says evaluation must begin with the concerns and perspectives of the faculty member and has developed a method which enables faculty to plan a self evaluation. This plan is not made in isolation; in fact it is essential the individual develop it with colleagues to facilitate generating a variety of ideas. Self evaluation is particularly important since faculty have difficulty seeing themselves as others see them. Blackburn and Clark (1975) say faculty complain more about the manner in which their work is judged and rewarded than about any other dimension of their professional roles because:

> Most academics sincerely believe they are performing at levels higher than those for which they receive institutional and personal recognition.

Although self evaluation alternates between evaluation for improvement and for promotion, tenure and merit, including it as one method in a comprehensive evaluation process would be useful. It would provide additional information on the individual's teaching as well as give self evaluation an importance which endless rhetoric on self assessment would not.

The Evaluation of Teaching in Canada

Teaching in Canadian universities is evaluated primarily through student questionnaires. In response to this general use of student opinion and its corollary, the search for the perfect questionnaire, the Teaching Effectiveness Committee of the Canadian Association of University Teachers, wishing to broaden the base of information on teaching, developed the idea of a teaching dossier and wrote a guide to its preparation. This was published in the CAUT's bulletin, May, 1980. The dossier is a "summary of a professor's major teaching accomplishements and strengths. It is to a professor's teaching what lists of publications, grants, honours, are to research." In effect, it is a combination of self report and evaluation because the faculty member decides what information will comprise it. He or she might include students' work, e.g., student scores on standardized tests, examples of student workbooks. He or she could identify areas of development and progress, outline research on his or her own teaching, and gather information from others, e.g., students, colleagues, graduates. Articles on teaching and participation in conferences on teaching could be listed.

Different universities in Canada handle evaluation somewhat differently. At Dalhousie, class evaluations are the responsibility of each faculty and the collective agreement states that promotion, tenure and merit may be influenced by student evaluations if the relevant faculty approves. McMaster's Senate says teaching must be evaluated and each faculty needs to make its own decision on the way it is to be done. Guelph's Faculty Policies(1980) states:

> Written student assessment of teaching competence will form part of the information used by the Department Committee in evaluating the faculty member's contribution in the area of teaching.

At the University of Victoria, a 1983 report to academic administrators says teaching can be evaluated and, yes, students are able to make a contribution to the process, and other methods also need to be utilized. A motion has gone to Senate urging departments to develop ways to gather data from a number of sources. The University of British Columbia's schools of Medicine and Dentistry utilize the teaching dossier. McGill has created a number of methods enabling faculty and administrators to develop ways of evaluating teaching. More recently, several videotapes and a workbook were produced which raise issues in evaluation and suggest a way of developing a comprehensive evaluation plan. (Cranton and Geis, 1982)

In a study done at the University of Western Ontario, Murray and Newby (1981) found students and faculty agreed on the five most important characteristics of university teaching: clarity of classroom presentation, stimulation of student learning, instructor's knowledge of subject matter, quality of course content, and ability to evaluate student performance fairly. However, the two groups ranked the characteristics differently. For faculty, stimulation of student learning was first, and to students, it was fourth; clarity and organization of classroom presentation was first to students and second to faculty.

Although the majority of those surveyed at Western felt students provided valid information on teaching, faculty felt they could evaluate two of the five important characteristics of teaching and colleagues the other three. However, these feelings, coupled with the Senate policy at Western, which requires the "solicitation of teaching evaluations from colleagues, graduate students, as well as from undergraduates," have not produced changes, and the undergraduate evaluation of classroom instruction remains the only method in common use. (Provost's Advisory Committee, 1982). This use of student evaluations together with policies and discussions confirming the importance of additional methods, seems to be the trend in Canadian universities.

Bibliography

Bergquist, William and Steven Phillips. "Components of an Effective Faculty Development Program." Journal of Higher Education. Vol. XLVI, No. 2 (1975), pp. 172-211

Blackburn, Robert and Mary Jo Clark. "An Assessment of Faculty Performance: Some Correlates Between Administrator, Colleague, Student and Self-Ratings." Sociology of Education, Vol. 43, Spring (1975), pp. 242-256.

Boud, David. "Self-Appraisal in Professional Development of Tertiary Teachers." In Freedom and Control in Higher Education. Ed. Allen Miller. Sydney: Higher Educatio Research and Development Society of Australasia, 1980, pp. 219-225.

Clark, Mary Jo and Robert T. Blackburn. "Faculty Performance Under Stress." In Faculty Effectiveness as Evaluated by Students. Ed. Alan Sockloff. Philadelphia: Temple University, 1973, pp. 233-252.

Centra, John. Determining Faculty Effectiveness. San Francisco: Jossey-Bass, 1979.

Cranton, P. A. and G. L. Geis. Evaluating Teaching, Discussion Guide. Montreal: McGill Centre for Teaching and Learning Services, 1982.

Cross, K. Patricia."Not Can But Will College Teaching Be Improved?" In New Directions for Higher Education: Reviewing and Evaluating Teaching. Ed. John Centra. San Francisco: Jossey-Bass, 1977.

Faculty Policies Handbook, University of Guelph, 1974-80.

Gaff, George. Toward Faculty Renewal. San Francisco: Jossey-Bass, 1975.

McGill Centre for Learning and Development. Evaluation for Administrative Decision-Making User Guide. Montreal: McGill University, n.d.

Murray, Harry. Evaluating University Teaching: A Review of Research. Toronto: Ontario Confederation of University Faculty Associations, 1980.

Murray, Harry and Bill Newby. "Faculty Attitudes Toward Evaluation of Teaching at the University of Western Ontario." Reflections. No. 6 (1981), pp. 1-6.

Provost's Advisory Committee on TEaching and Learning. "Evaluation of Teaching at the University of Western Ontario." Western News Supplement, 30 Sept. 1982, pp. 1-4.

Scriven, M. "The Methodology of Evaluation," Perspectives of Curriculum Evaluation. Ed. R. Stake. Chicago: Rand-McNally, 1967.

Seldin, Peter. How Colleges Evaluate Professors. Croton-on-Hudson: Blythe-Pennington, Ltd. 1975.

Teaching Effectiveness Committee of the Canadian Association Of University Teachers. "Guide to the Teaching Dossier." CAUT Bulletin, May 1980, pp. 15-22.

University Teaching Can Be Evaluated: Editorial. Teaching and Learning Centre Correspondence, Vol. II, Issue 3 (1983), p.l.

THE ASSESSMENT OF ACADEMIC STAFF
IN NEW ZEALAND AND AUSTRALIA

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While New Zealand and Australia are geographically remote from the western world, the organisation of higher education in these countries draws upon the traditions of both U.K. and U.S.A. Many academic staff obtained their degrees from British universities, and, as in U.K., there is a binary division which (very largely) separates the degree-granting universities from the rest of the tertiary institutions. From U.S.A., Australasian universities have borrowed much of the degree structure, with students typically choosing from among a range of courses and accruing course units/credits. There are also large numbers of "mature" and part-time students studying at the universities and colleges. It is not surprising, then, to find that assessment procedures for academic staff reflect elements of both British and American attitudes and practices.

Two main sources are used in describing the assessment of academic staff.

(a) A survey of professional development policies in colleges and universities in N.Z. and Australia.

(b) A case-study based on a pilot project which aimed to implement a systematic procedure for the evaluation of teaching in a N.Z. University.

THE SURVEY OF PROFESSIONAL DEVELOPMENT POLICIES

This survey was carried out jointly with Brad Imrie, Victoria University, Wellington, and was sponsored by Higher Education Research and Development Society of Australasia and the New Zealand Council for Educational Research. The questionnaire survey implied a major interest in the formative aspects of assessment, but summative administrative decision making (via promotions, confirmation of appointments) was also included. Briefly, the main aspects of the survey were as follows.

1. A questionnaire was sent to Registrars of all higher education institutions in N.Z. and Australia, with the request that they complete the questionnaire and also supply any relevant documentation associated with the replies.

2. Questions were aimed at the eliciting of official institutional policies. While it was fully appreciated that policy is not equivalent to practice, policy does set an institutional climate within which initiatives can be taken and also demarks the boundaries for feasible actions.

3. Questions covered two very general areas.
   - Career Development of the individual, especially through probationary appointment/confirmation and promotion.
   - The Work, which covered teaching, research, administration and "general contributions".

4. Response rates were as follows:- Australian Universities, 63%; Australian Colleges, 65%; New Zealand Colleges, 87%. Unfortunately (probably owing to a misconstruing of the aims of the survey), the N.Z. Universities took a joint decision not to participate in the survey.

Some Results of the Survey

The questionnaire was very comprehensive and it is not appropriate to attempt any kind of exhaustive analysis in this context. Instead, some of the sections which relate most directly to the assessment of staff (summative and formative) are described briefly.

(a) Probationary periods for newly-appointed staff members are now a requirement of all the institutions surveyed. The typical probationary appointment is for a period of three years, after which the "satisfactory" appointee is granted a permanent position. The assessment of the probationary period is almost invariably carried out by a committee, which is guided largely by the recommendation of the Head/Chairman of Department. Criteria for successful completion of probation are vague. In the rather halcyon days of expansion, confirmation of appointment was largely a rubber-stamp procedure and the vagueness of the criteria was not particularly important for the probationer insofar as this eventual confirmation was concerned. In the present climate of cost-cutting this situation is changing.

Given that an important summative assessment is carried out at the end of three years, one might expect that previous formative assessments and support structures would also be a required part of the total structure. This is not, in fact, the case as the following figures demonstrate.

	Australian Universities	Australian Colleges	N.Z. Colleges
A. Percentage of institutions which have required inservice programmes for probationers.	0%	10%	80%[1]
B. Percentage of institutions which have formal requirements relating to support[2] for new staff	8%	6%	25%
C. Percentage of institutions which formally require that new staff are subjected to a range of work experiences[3].	17%	14%	35%

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[1] This figure is high, because all N.Z. Technical College tutors are required to undergo a comprehensive tutor training programme during their early appointment.

[2] Support in the form of, e.g., feedback on teaching performance, assigning of a senior departmental "mentor", assistance with initiating and funding research, etc.

[3] Experiences such as large and small group teaching, setting examinations, departmental administration, postgraduate supervision, etc.

It seems rather curious that the initial career development and professional exposure of staff is organised along such ad hoc lines. This situation is not peculiar to N.Z. and Australia, and is a fairly accurate reflection of what goes on in U.K. and U.S.A. (at least). The formative assessment of staff during early appointment is largely unsystematic, and this is increasingly a worry for probationary staff who know that a decision as to their suitability for permanent appointment will be made in the next year or two. Given the apparent lack of any systematic assessment, it is often difficult for a probationer to imagine what sources of information influence the head of department and the decision-making committee.

(b) The Work of an academic staff member involves teaching, research, administration and "other contributions" - practically all of the institutions surveyed agreed upon this. However, systematic, periodic appraisal of these aspects of the work of a department/school are not common, as the following percentage figures for those institutions replying indicate.

	Australian Universities	Australian Colleges	N.Z. Colleges
Teaching	25%	31%	50%
Research	33%	20%	5%
Administration	33%	47%	40%

The above figures are for the overall work of the institution. In the individual case, summative assessment of the various aspects of the work occurs during the probation (in terms of confirmation of appointment) and promotion exercises. It would be possible to introduce a formative aspect by informing unsuccessful applicants of the reason their promotions applications had been rejected. This is not a common procedure in the institutions surveyed, as the following figures indicate.

	Australian Universities	Australian Colleges	N.Z. Colleges
Percentage of institutions providing feedback to unsuccessful applicants	33%	49%	25%

Of course, as resources decline then promotions exercises become outright competitions, norm rather than criterion based, and the standards of excellence which are demanded continue to inflate. But the dimensions according to which this excellence is determined are often hazy, to applicants and decision-making committees alike.

Teaching, research, administration and "other contributions" are taken into account by nearly all institutions: how these are assessed is one matter, and the relative importance placed upon each in the decision-making process is another. Consider the second of these aspects. Relative weightings seem to depend both upon the institution and the level at which the promotion is sought.

In Universities it is research which is the main criterion for promotion - but this bald statement has to be tempered by the observation that teaching becomes important for promotion at the lower levels when research output is weak. (In very exceptional circumstances a staff member may be promoted to a relatively high level on the strength of his teaching/administration - but this is rare). The place of administrative ability is not clearly defined, but there is often the implication that it is required for promotion to the higher levels, in combination with research competence.

In Colleges research output is not nearly so important. At the lower levels it is teaching ability which is considered the prime criterion for promotion: at higher levels administrative ability and sound professional standing/contacts become increasingly important.

But how these aspects are assessed is another matter altogether. The discussion will be confined to the assessment of teaching, and approached through a case-study of a pilot teaching assessment project carried out at the University of Auckland, which is fairly typical of other institutions in Australasia.

The idea of objective assessment of teaching (in any widespread sense) is relatively new; certainly a decade ago, it was very unusual to find a promotions application containing anything like scores on a student evaluation of teaching questionnaire. Information on teaching ability supplied to the promotions committee came almost entirely from heads of departments, and this was often patchy and usually based on hearsay rather than direct observation or systematic survey. By 1980, promotions committee had become somewhat frustrated by this state of affairs and surveyed all heads of departments as to the ways in which they assessed the teaching competence of their staff. There was a concurrent drift of opinion among many staff members toward the idea of student assessment of teaching. The somewhat changed attitude could be summarised as:

> "I'm a good teacher and I want it taken into account when promotions are decided. And if I'm a good teacher, then my students will say so."

Out of several separate strands, a trial scheme for teaching assessment was piloted in two departments. This scheme was based around a student questionnaire form, the main aspects of which were as follows.

(a) The initial part of the form consisted of a small number of global items (eight in the final version). The rationale for this part of the questionnaire was in terms of summative assessment. In time it was hoped that norms for different teaching contexts would build up, and enable an individual's teaching capability (as judged by student feedback) to be placed in a meaningful context. A typical item from this section is:-

> "The instructor is adept at explaining concepts. For instance, relates separate pieces of knowledge in a meaningful way".

(b) Then followed two open-ended questions:-

> "What do you like best about this instructor's teaching?"
> "How could this instructor's teaching best be improved?".

The aim of these two questions was formative, and designed to elicit constructive criticism of the teaching.

(c) A final section of the questionnaire form was "tailor-made" for each individual course within which the teaching took place. This involved a conversation with each staff member about the general aims of the course, areas of concern, etc, and then the translation of these into a series of questionnaire items.

(d) Questionnaires were administered to students during formal class sessions toward the end of courses. The evaluations were confidential and the property of the staff member concerned unless (s)he wished otherwise.

The pilot scheme was very successful in one of the departments concerned (various logistical arrangements inhibited a proper trial in the other). Staff were generally satisfied that students' comments were an accurate reflection of the strengths and weaknesses of the teaching to which they were exposed. Several staff members initiated chenges as a result of student feedback - and improvements in students ratings occurred in the subsequent year. It would be nice to report that the scheme has been enthusiastically adopted by more departments, but this has not been the case. Hierarchical inertia is probably the main cause; plus the continued suspicion of many senior academics relating to student ratings of teaching. However, more and more individual staff are now making use of "standard" evaluation forms to gain objective evidence relating to their teaching competence, and many others are using the questionnaire feedback as a basis for small group discussions with students and subsequent instructional development.

While systematic evaluation of teaching is still not an accepted part of the Australasian higher educational scence, in the way which it is in U.S.A., staff are now probably more enthusiastic about the concept than their colleagues in U.K. The most likely outcome is that assessment of teaching, particularly through student questionnaires, will slowly become more commonplace and grow in importance as a source of information for administrative decision-making. But the time-scale associated with the change is far from predictable.

AN ENQUIRY INTO STAFF PROMOTION REGULATIONS IN UK UNIVERSITIES AND POLYTECHNICS

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1) Abstract

A questionaire to U.K. universities and polytechnics reveals that:

a) All replying universities, but not all polytechnics, specify teaching should be taken into account at at least one promotion point for academic staff;

b) Teaching is most often mentioned when promoting from tenured to un-tenured staff and, in the case of universities only, lecturer to senior lecturer;

c) Very few institutions have regulations or written guidelines suggesting how teaching might be taken into account.

2) Enquiry

A letter was sent to the Vice-Chancellors of all UK universities, to heads of all University of London colleges and to the principals of all U.K. polytechnics asking them to supply copies of regulations governing staff promotion. A similar letter was sent to the heads of each department of three colleges in the University of London.

In the letter three promotion points were specified: from un-tenured to tenured staff, from lecturer to senior lecturer and promotion to Reader and Professor. The letter indicated the investigator's particular interest in the extent to which teaching ability was taken into account at each of the three promotional points.

3) Responses

Requests were sent to forty-four universities, thirty-two of whom responded; fourteen London colleges of whom nine responded; thirty-six polytechnics of whom twenty responded. Of the London college heads of departments, thirty of the eighty-one contacted replied. In total ninety-one replies were received to one hundred and seventy-five requests.

The above figures represent the following response rates: Universities, 73%; London colleges, 65%; polytechnics, 55%; Heads of Departments, 37%; giving an overal total response rate of 52%.

4) Results

None of the institutions replying reported a total absence of instructions or guidelines. In the case of every university (but not polytechnic) it was suggested that teaching should be taken into account at at least one of the three promotion points. In other words, in a normal university career, teaching would be assessed at at least one point. In most universities and polytechnics teaching was to be taken into account at both the first (non-tenured to tenured) and second (lecturer to senior lecturer) promotion points. Less than half the institutions suggested that teaching ability should be taken into account in promotion to reader or professor. Indeed, eleven universities and one polytechnic had regulations that specifically instructed that teaching should not be taken into account at this level. Summary data are presented in figures I and II.

Figure I

Teaching taken into account for promotion at:	Universities (n = 41)	Polytechnics (n = 20)
a) un-tenured to tenured	37	14
b) lecturer to senior lecturer	39	14
c) to Readership/Professorship	18	7

Figure II

Consideration of teaching for promotion to Reader/Professor:	Universities (n = 41)	Polytechnics (n = 20)
Instruction not to take teaching into account	11	1
Teaching regarded as insignificant	6	0
Teaching may exceptionally be taken into account	1	0
Teaching should normally be taken into account	17	7
No information given	6	12

In the majority of instances in which the regulations said that teaching should be taken into account, no suggestions was made as to the type of evidence which might be considered. A small number of institutions specified the type of evidence that should be used and some others illustrated the kind of evidence that might be used. The data are represented in Figure III.

Figure III

Evidence of Teaching	Universities (n = 41)	Polytechnics (n = 20)
Teaching to be taken into account but no suggestion of what evidence might be suitable.		
a) un-tenured to tenured	29	12
b) lecturer to senior lecturer	26	12
c) to Reader/Professor	12	6
At at least one of the promotion points	32	13
Type of evidence to be considered specified.		
a) un-tenured to tenured	3	1
b) lecturer to senior-lecturer	5	1
c) to Reader/Professor	2	0
At at least one of the promotion points	9	1
Possible types of evidence illustrated.		
a) un-tenured to tenured	5	1
b) lecturer to senior-lecturer	8	1
c) to Reader/Professor	4	1
At one or more of the promotion points	10	1

Another way of considering the data is to classify the regulations into those which suggest that teaching ability should rely on the subjective judgement of others and those which suggest an attempt at collecting data (some more systematically than others). Only two universities appear to have a well considered scheme although another three universities and three polytechnics make some attempt at gathering evidence upon which an evaluation of teaching ability might be made. However, without direct observation it is not possible to establish whether these schemes are actually used and, if so, how well.

University of East Anglia

The University of East Anglia provided the most detailed scheme. The University has adopted a "dossier system". Candidates for promotion may submit a dossier to the dean of their faculty who may draw upon it when making his recommendations to the Promotions Committee of the Senate. The dossier is intended as a personal statement of aspiration and achievements in teaching. It may include: a description of teaching innovations; examples of teaching materials; evidence of interest in teaching from published articles or courses and conferences attended; student opinion; comments from peers and observors.

In the Rules and Procedures there is a description of a procedure for annual review for all members of the academic staff. For confirmation of a tenured post the annual report shall "review the extent to which the lecturer concerned has attained, and shown promise of continuing to develop, a standard of effectiveness both in teaching and in research..." For promotion to senior lecturer the candidate should have either "an outstanding record in teaching and a satisfactory contribution to the research and general activities of the school, or considerable merit in a general capacity, e.g. in teaching and research and administrative duties... Promotion to readership as well as requiring the usual scholarly reputation also "requires a satisfactory contribution to the teaching...of the School." Similarly for personal chairs the Promotion's Committee must be satisfied of a candidates "undoubted professiorial calibre in regard to teaching and research". In an appendix to the *Rules and procedures* appears a check-list of factors which "will be taken into account" for promotion. The list is as follows:

a) The ability to teach at different levels - first year, second year, third year, postgraduate, etc.
b) The ability to teach a variety of special subjects as well as basic standard courses.
c) The ability to teach new courses and modify existing courses in evolving areas of study.
d) The ability to teach different courses in response to changes in student demand or in the availability of other colleagues to meet the demands for existing courses.
e) The load of teaching and assessment carried by members of staff as indicated by student enrollment for his course.

f) The development of improved teaching methods and improved methods of assessment.
g) The planning and organisation of teaching programmes.
h) Organisation and participation in extra-mural teaching.

The Appendix goes on to list similar items under research, other academic activities and administration.

Imperial College: Department of Chemical Engineering

Another interesting example comes from the Department of Chemical Engineering at Imperial College, University of London. It takes the form of a proposal not yet adopted by the Department. Under it, each member of staff would prepare annually a report on their year's activity under three headings; research, teaching and administration.

The Department is currently reviewing its promotion procedures. A working party has drawn up the following proposal. Each member of staff should prepare annually a report on their year's activity under three headings: research, teaching and administration. A list is provided to suggest what might be considered legitimate evidence to be considered under these three headings. It is not suggested that there be any compulsion about the contents of the reports but the promotion panel would consider each member of staff eligible for promotion under each of the three headings and would be expected to give a rationale for each choice of the candidates in those terms. The Panel should consider, not only the proven ability of staff members, but the opportunity afforded by the Department for demonstrating their ability.

The list of evidence of teaching ability includes the following items:-

1) "Crude evidence" of basic competence, e.g. response to questionnaires, attendance figures at lectures, pass rates at examinations, complaints from students.
2) Course planning, including course content and organisation both for the staff's use and for helping students understand the context of their course.
3) Contributions to teaching teams.
4) Innovation in course content or teaching methods.
5) Internal consistency of teaching strategy (e.g. are course content, teaching method and assessment method appropriately matched).
6) Teaching through commenting on student's written work.
7) Special responsibilities in teaching and organisation.
8) Developments in teaching strategies in laboratory work, design classes etc.
9) Influence on colleagues in teaching matters.
10) Self-development: attendance at courses, staff seminars etc.
11) Publications in teaching and educational aspects of lecturer's subject matter.
12) Organisation of appropriate industrial contact for students.

M.Sc teaching would be considered in approximately the same form as undergraduate teaching above.

Consideration of the supervision of research students could include the following:

1) Numbers of research students completing their theses.
2) Quality of the publications from students.
3) Evidence of procedures adopted for training students.
4) Accident and safety methods of students.
5) Success in obtaining funding for postgraduate students.
6) Success in providing good opportunities for students, e.g. industrial and academic contacts.
7) Evidence of encouraging independence in students.

Extra mural teaching could also be taken into account.

A London Polytechnic

One of the London polytechnics provided a cautionary tale. In 1980 an attempt was made to allocate three principle lecturer posts on the basis of teaching evidence. A specialist in teaching in higher education was appointed as an external assessor and a systematic and detailed evaluation was carried out including interviews and visits to classrooms. Eighty staff applied for the three positions. The Deputy Director of the Polytechnic reports as follows:

> "I have to say, with regret, that the whole exercise created many more problems than it solved. There may have been some general agreement that we did chose people who were acknowledged as good teachers. The cost was to leave seventy-seven people very upset at being passed over."

The exercise revealed that although it is part of a head of department's job description that she or he has direct responsibility for the quality of teaching in their department, the majority of heads seemed either unwilling or unable to develop procedures for realising this responsiblity. It seemed likely that some of the ill-feeling was generated by the effort many staff put into preparing materials, especially for the submission rather than simply collecting materials already prepared for class. In the circumstances, many of them felt their efforts had been wasted.

5) Discussion

It is public policy that the polytechnics' prime purpose is the training of people for gainful employment. In this respect they supposedly differ from unversities. It seems odd, therefore, that the regulations from universities, more often than those from polytechnics, should specify that teaching be taken into account. One possibility is that the importance of teaching is so taken for granted in polytechnics that it is not singled out for especial mention in regulations. There is however a more direct, although not unrelated, consideration. As part of an agreement between the universities and the union representing university teachers, drawn up in 1971, there were included criteria for confirming appointment after a period of probation. The award of a tenured post, the relevant document reminds us, is among "the most vital staffing decision that a university can make. At this point, the ability and energy of a lecturer are both under scrutiny, with termination of employment the sanction against failure on either count." Once appointed to a tenured post, the university no longer has the right to question the lecturer's ability: "Within that grade (of lecturer), only their energy and application may thereafter be called into question." The document goes on to discuss the criteria for confirming appointments after a period of probation: - "The employing universities should be satisfied that, having regard to his age, standing, experience and the opportunities he is being offered:

a) he has satisfactorily engaged in the teaching of presecribed courses and supervisory tutorial work assigned to him;

b) he has satisfactorily engaged in research towards the advancement of his subject;

c) he has conscienciously carried out such examining duties and satisfactorily performed such administrative duties as have been required of him;

d) He shows promise by his work and enterprise of continuing to develop as a university teacher and a scholar."

No criteria are given for these assessments, yet the document rather optimistically observes "the first three of these conditions are fairly straightforward and each admits of objective data".

On reading University regulations one gets the firm impression that many institutions were strongly influenced in their wording by the first three criteria listed in the agreement. The acknowledgement of the need to take teaching performance into account, yet with little indication of what that might entail, sets a pattern for thirty-two of the forty-one unversities replying (although, interestingly, in the case of three universities the wording is employed at a promotion point other than at the end of the probationery period).

The replies from heads of department did not reveal much by way of additional evidence of regulations or guidelines. They did reveal a certain amount of ignorance of existing regulations and a good deal of scepticism about both the need and possibliility of considering teaching during promotion. The replies on the whole are sufficient to bring into doubt the general enforcement or abidance by these regulations. The point is forcefully made in one reply from a professor which serves to conclude this paper.

"First of all, at least in the Faculty of Arts here, promotion is a competitive procedure. The number of possible promotions is governed by the number of the College's ration of senior and junior staff and by competition between the Faculties and the more powerful Departments for the allocation of these promotions. Heads of Department meet informally to draw up a short list. The criteria they use in order of importance are:

a) The consequences of not recommending a candidate for promotion - he (or more rarely she) might apply for another job and the post that falls vacant may be frozen or lowered in status;

b) The personality of the candidate for promotion: the more aggressive and vindictive, the more likely they are to receive serious consideration;

c) The research work. Very rarely has a Head of Department, let alone members of other Departments or of the Personnel Committee read more than a blurb of the candidate's research. They therefore place most of their trust in hard cover books with blurbs and with reviews outside the specialist journals, so that they can form a secondary opinion. Research that is confined to articles and conference papers in specialist journals may win respect and recommendation but is unlikely to win promotion;

d) Adminstrative efficiency is something that can be measured and even prized by those Heads of Department that are most inclined to delegate. Willingness to convene and chair the more boring sub-committees may well be an important factor in promotion.

e) Teaching. This is considered an embarassing subject by most Heads of Departments. They are extremely reluctant to contemplate any form of evaluation of teaching performance. Past experience where lecturers have circulated questionnaires to students have been successfully suppressed. Attempts to measure "value added" by comparing the initial entry qualifications with the quality of their final degrees have also not been pursued. Young lecturers who persist in teaching fifteen hours a week when their Head of Department can barely find time for four do not necessarily enhance their prospects of promotion.

So much for the promotion to tenured staff or to senior lecturer. Promotion to senior lecturer or to reader or professor is somewhat different in that the financial implications are insignificant. As you are probably aware, this procedure is so labarynthine that no recommendation will be contemplated unless the outline can be formally fixed in advance. Here too, the perceived quality of research is overwhelmingly important. After the initial recommendation, the most decisive power is exerted by the Panel of Experts (internal and external) some of whom are likely to be known to the candidate for promotion, but they will only know him by his specialised reputation and perhaps socially.

In some instances the work of the applicant may be in competition with that of the experts, so the outcome of their deliberations is likely to depend on a very subjective evaluation.

As you will see from your returns, the remarkable thing about promotion of staff in this University is the complete lack of any proper assessment of a major part of their activity, i.e. their teaching."

7.63

THE COMPUTER AS AN EFFECTIVE AND EFFICIENT TUTOR

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ABSTRACT

Over 350 students have been tutored by a VAX Computer in a PSI section of introductory psychology. These students' performance and attitudes were compared with approximately equal numbers of students in human proctored PSI and Lecture/ Discussion sections of the same course.

Performance on common course examinations for computer tutored students was equal to that of human tutored students and significantly better than students in Lecture/Discussion sections.

Analysis of detailed questionnaires which examined study habits, information organization abilities, and course format preference revealed that students preferred PSI to Lecture methods and accepted the computer as an effective and efficient tutor. Students exposed to both the computer and human tutors often preferred the computer to its human counterpart.

Further analysis of the system revealed that feedback to the student was most appropriate if limited to a concept and its location within the course's written material which a student had not mastered. The computer was found to be the most cost efficient and proficient at providing this form of information.

Overall, the computer proved to be an acceptable and effective tutor for most of the student population.

Keller (1968) held that one of the five essential ingredients in a Personalized System of Instruction was the use of student proctors. These proctors (also known as tutors, facilitators, TA's or teachers) play four significant roles in a PSI course. These include: 1) the administration and evaluation of quizzes, 2) providing feedback or tutoring based on the quizzes, 3) social facilitation, and 4) general course administration assistance. Yet the tutor as an "essential" has been questioned. For example, Caldwell, Kishis, Ripley, Farudi Hochstetter and Radiken (1978) attempted to clarify the role of the tutor. They found that tutors had little or no effect on students' performance on final examinations. We, in contrast, (Leppmann and Herrmann, 1981), found that feedback given by tutors was an essential ingredient in successful PSI formats. An important difference in our studies and those of Caldwell et al. is that our feedback was a simple statement of "informational content" (Robin and Heselton, 1977) while their tutors were not so limited. This brief but specific feedback had been found (Robin and Heselton, 1977) to be more efficient and effective than the traditional techniques of detailed advice or information extraction via probing questions. Unfortunately, this type of limited communication requires discipline rarely found in most individuals who serve as tutors. In addition, training tutors to provide feedback in this specific form is both time consuming and expensive (Robin and Heselton, 1977). In the modern era of reduced faculty numbers and continually shrinking budgets such luxuries as tutorial training programs may provide an expensive handicap, hindering the implementation of a PSI course (Leppmann and Herrmann, 1981). We attempted, therefore, to develop an equivalent but less expensive alternative to the well-trained human tutor.

METHOD

Seven hundred and fifty students enrolled in a PSI section of introductory psychology at the University of Guelph had the option of taking the mastery quizzes under either human or computer tutorial circumstances. The option was restricted in that each method had a capacity of handling approximately half the number of students within the section. Consequently some students were not allowed a free choice but (with their concurrence) were forced into the human tutorial option. (Note: the computer option was the more popular free choice 421 to 295).

Human tutors were experienced graduate students (i.e., they had performed as tutors over several semesters) and were available to the students during 15 1-hour time periods scattered throughout the Monday to Friday teaching week. A VAX computer system designed by Digital Equipment Corporation, using a DEC-10 core served as the alternative tutor. The VAX terminals were available 22 hours per day, 7 days per week under five-minute time limit per sign-on (for security purposes questions were presented for no more than 30 seconds and quizzes for no more than 5 minutes).

Feedback consisted of simple statements referring the student to the concept and its location within the written material with which the student was having a problem. All administrative and technical information needed by students was provided in 1) a Mastery Guide, 2) a Study Guide, and 3) the Textbook used by all sections of the course.

Upon completion of the final examination, students were asked to complete a detailed questionnaire which we had previously used to provide information about the students' behaviour in relation to the PSI option. This questionnaire was given in conjunction with the course evaluation instrument used at this University.

RESULTS AND DISCUSSION

The effectiveness of each tutorial method was examined via comparisons of student performance on the final examination (common to all students in our introductory psychology course). Performance on the final exam did not distinguish between the two tutorial methods (Table 1). Yet, performance for each group was significantly better than for students enrolled in the traditional lecture/seminar/discussion sections of the course. This difference of approximately one letter grade (i.e., better than ten grade points changing the average final rating from C to B) was equivalent to what we previously identified as indicating an effective PSI situation (Leppmann and Herrmann, 1981).

Table 1

Analysis of study habits, exam preferences and attitudes toward various instructional formats were examined by comparing the responses to a questionnaire which we had previously used in order to obtain detailed background information about the effect of the PSI format (Herrmann and Leppmann, 1982). Analysis of the questionnaire data revealed group differences between PSI students and traditional method students similar to those we have previously reported (Herrmann and Leppmann, 1982), and consequently will not be reported here. Descriptive statistical analysis of the answers of human vs computer students revealed several important differences. These patterns of model responses were identified as significant via a Chi-square analysis of response frequencies.

Table 2

In general PSI students report having the same attitude as regards their choice of section, but report spending more time studying than do their counterparts in the traditional teaching method sections. As a result they expect this effort to produce a higher grade.

Table 3

This alledgedly extra effort however, was organized quite differently. Computer facilitated students report that they prepared more systematically than the human facilitated students. Computer facilitated students suggest they spread their effort across the entire course. Human facilitated students did report they studied more systematically than they would have if they were taking the course under the traditional lecture/seminar method, but still tended to focus their studies as they would under the traditional method. This same pattern was found not only in the preparation of modules but in preparing for midterm examinations. Computer students reviewed the material rather than crammed. Human tutored students remained less systematic but still more systematic than non-PSI students.

Table 4

Relevant comparisons of student demographics reveal that: 1) computer students were specializing in the natural or biological sciences, 2) female students usually chose the human option while males chose the computer.

Table 5

As to the administrative details of the course, 1) computer students found the study guide was more helpful during their preparations than did human-facilitated students, 2) human option students found the facilitator-provided feedback was the most helpful ingredient in their preparations, and 3) computer-option students believed the module test covered the main points of a module far more often than did human-faciltated students. Most interesting was the fact that the extensive details necessary to operate the computer were found to be far simpler than the brief instructions necessary to complete the human facilitator connection. As a whole these results clearly indicate the non-human tutor is an efficient method of providing mastery testing and effective feedback. It is most interesting to note, however, that both the human facilitators and the computer were well liked by their users.

A post hoc cost and time analysis of both methods of tutoring reveal that the computer was considerably cheaper and more efficient. The computer could handle more students conveniently than could human facilitators. The computer was able to handle more students, more often and at less than half the cost of the human facilitator option. The mechanical nature of the human-computer interaction did not negatively effect the advantage gained under the PSI option. This finding is not affected by the computer students' perceptions of increased quiz difficulty. In fact, despite this perception, computer students made the same average number of attempts per module to demonstrate mastery.

In summary, feedback is necessary for successful PSI performance. But that feedback does not have to come from a human tutor.

References

Caldwell, E.C., Bissonnette, K., Klishis, M. J., Ripley, J.E., Farudi, P. P., Hochstetter, G. T., and J. E. Radiker. Mastery, The Essential Element in PSI. Teaching of Psychology, 1978, 5, 59-64.

Herrmann, T. F., and P. Leppmann. PSI Personalized for Whom? ERIC DOCUMENT ED 210 575, 1982.

Leppmann, P. and T. F. Herrmann. PSI, What are the critical elements? A paper presented at the annual meeting of the American Psychology Association, Los Angeles, August 24-26, 1981.

Keller, F. S. Goodbye Teacher. JOURNAL OF APPLIED BEHAVIOR ANALYSIS, 1968, 1, 79-89.

Robin, A. L. and P. Heselton. Proctor Training: the effects of a manual vs direct training. JOURNAL OF PERSONALIZED INSTRUCTION, 1977, 2, 19-24.

Rolls, J. H. and R. M. Pagen. Computer Managed Instruction Produces Better Learning in an Introductory Psychology Course. A paper presented at the Conference on Computers in Undergraduate Cirricula. East Lansing, MI, 1977.

Table 1

	No. of Students	Grade	
		Mean	SE
Lecture - Seminar	342	65.17	1.09
PSI - Facilitator	356	78.96	1.11
PSI - Computer	360	79.26	1.03

Table 2

Questionnaire Response Patterns

Question	Model Response		
	L/S	PSI	
		Computer	Facilitator
1. In retrospect, I would have preferred to have taken this course by	same	same	same
2. Time and effort required compared to other courses at this level	same	more	more
3. Time spent studying each week (in hours)	<3	>3	>3
4. Amount of effort required compared to other method (L/S vs PSI)	same	more	more
5. Method will result in a grade which is	same	higher	higher

Table 3

Questionnaire Response Patterns

	Question	Model Response		
		L/S	Computer	Facilitator
6.	Normally prepare for exams by -	Increase as exam approaches	Increase as exam approaches	Increase as exam approaches
7.	Prepared for modules/ seminars -	Cram	Systematically	cram/systematically
8.	Prepared for midterms -	Cram/increase as exam approaches	review/increase as exam approaches	cram/increase as exam approaches

Table 4

Questionnaire Response Patterns

	Question	Model Response		
		L/S	Computer	Facilitator
9.	Degree Program	B.A.	B.Sc.	B.Sc.
10.	Gender	female/male	male/female	female/male

Table 5

Questionnaire Response Patterns

	Question	Model Response		
		L/S	Computer	Facilitator
11.	Module tests were	N/A	Difficult	Fair
12.	Module questions covered main points	N/A	Always/often	Usually
13.	Feedback helped	N/A	Little	Most helpful
14.	Study Guide	N/A	Most helpful	Helped/most helpful
15.	Mechanical Details	N/A	Easy/simple	Easy/fair

THE USE OF MICROCOMPUTERS AS EFFECTIVE TUTORS

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ABSTRACT

Microcomputers, when used under a time sharing arrangement, provide a cost efficient method of providing PSI type tutoring spread over several small enrolment courses.

The University of Guelph is presently developing and testing a prototype system which allows up to four students at any one time to share a single Apple IIe computer by an extended disk storage capability. This arrangement allows simultaneous efficient tutoring in several different courses. The system offers particular advantages for use in courses with small enrollments when PSI or AT methods are usually ignored.

Initial evidence suggests that the microcomputer system allows proficient use of minimal monetary, space, and personnel resources, yet still significantly improves student performance over traditional lecture/discussion methods presently in use.

A major problem facing the use of computers in education is their effectiveness. Educators, since the introduction of the microcomputer, have expressed enthusiasm for them by purchasing large numbers of small computers. This enthusiasm is based, alledgedly, on the fact that CAI via microcomputers is instructionally and cost effective.

Suppes (Suppes, 1972; Suppes and Machen, 1978), as well as Dalgaard and Lewis at this conference, have detailed this trend.

In general, students learn more, but the cost effectiveness, in this age of reduced budgets and decreasing enrolments, brings CAI into question. Yet, the argument has been advanced (Chambers and Bork, 1980) that reduced costs, due to mass production and the market impact of the home computer-based entertainment system, will finally make CAI cost effective. But will CAI ever be cost effective? Will it ever be able to handle effectively large numbers of students?

At the University of Guelph we are attempting to answer this question.

Microcomputers in the Psychology Department are bringing the realities of experiments in psychology to students enrolled in Experimental and Cognitive Psychology. Six microcomputers are used to support teaching functions. These are in use eight hours a day, five days a week, and are capable of handling 300 students per week. The software for the microcomputers was designed primarily by faculty members in the department. The alledged value of the microcomputers is that they operate in real time and are dedicated to particular functions. They are intended to supplement rather than replace faculty or teaching assistants. In fact, personnel required is increased due to the new requirement of hardware or software technical support. The experience has resulted in a general evaluation which ends in the statement, "Microcomputers are not instituted for their efficiency but to provide a richer educational experience which would not otherwise be available because of time and resource limitations." Therefore, despite the costs, the experiment is being continued but not expanded.

During this same period the physics department purchased two microcomputers augmented by extended hard disk capacity and began an experiment in CMI. One computer was used to manage the administrative details of the PSI format Introductory Physics. The computer kept the course records and randomly assigned module tests to students. The second computer was used to organize the administrative details of the laboratory component of the same course as well as to provide students with immediate feedback as to their success or failure in arriving at specific measures. These computers were available eight hours per day, five days a week, and handled 2000 students per week. In this situation, the microcomputer has proven cost effective, reducing the number of support personnel by two and releasing faculty from tedious administrative work - allowing more personal contact with students.

This easily documented success of CMI over CAI resulted in a widespread interest in its application to courses in several departments and colleges. (Physics, Chemistry, Math and Statistics, Modern Languages and Psychology). Hence a working group has been formed in order to coordinate microcomputer use across disciplines. The initial rapid agreement and quick implementation of trial projects led us to believe we would be able to give a preliminary report of these attempts at this conference. Unfortunately, as interest in the project grew, rapid progress has been replaced by the snails pace of interdisciplinary cooperation. This cooperation has led us to reconsider our options and to an improved scheme for providing CMI support to multiple users.

The revised scheme will result in a situation where several thousand students will be handled quickly and cheaply. The first component of the scheme is that the system be user-friendly. This friendliness extends to both students and faculty. Students will be faced with a variety of question formats from multiple choice to short answer types, with some opportunity for misspelling. Faculty will be provided with a simplified format within which to choose options, write questions, and designate feedback. This format will not require any computer usage ability of the faculty member. The basic system has already been developed and tested on the University's VAX computer and is now being modified for use on IBM and Apple microcomputer systems. This software system provides efficient random module test construction from question banks, feedback, short tutoring or instructional modules, and efficient record keeping.

A second component of the scheme is that students will be presented the material on NAPLPS standard monitor rather than TV or terminal monitors. This option allows the presentation of high quality graphics based on user friendly creation system. The very friendly page creation is being provided by the addition of a FORMIC Page Creation system and allows faculty to design graphics for Apple or IBM microcomputers using - a) Colour Graphic Palettes, b) a Specific Question Page Creation Option, and c) via a BASIC Computer Language program. This provides economic storage and presentation of anatomical drawings, three dimensional presentations and interesting question layouts.

The final component of the scheme centers on a central location for the system. If such can be achieved, students from several disciplines and courses can have access to terminals for up to 22 hours per day. The terminals, in groups of four or possibly eight, would be connected with a supervising microcomputer connected to a 20 megabyte hard disk. Students would sign on at a terminal, the supervisor unit would consult the student's record, create a test and download the test to the peripheral unit. The peripheral would present the test, correct the test, provide feedback, and notify the supervisor of the results. The supervisor would update the student's record file and provide any extra tutoring necessary. Students would be given limited access of approximately five minutes per test. Consequently a four terminal system, during any 22-hour day would be able to handle over 3000 students.

Our best estimate is that microcomputers used under a CMI format will prove to be not only instructionally effective but cost effective, and even prior to its introduction, the scheme is proving to be a popular option at Guelph.

References

Chambers, J. A. and A. Bork. Computer Assisted Learning in U.S. Secondary/Elementary Schools. Center for Information Processing, California State University Fresno Report. 80-03, July, 1980.

Dalgaard, B. R. and D. R. Lewis. Questions of CAI Cost-Effectiveness: The Case of Economics. A paper presented at the 9th Conference for Improving University Teaching, Dublin, 1983.

Suppes, P. Computer Assisted Instruction at Stanford. MAN AND COMPUTER, Basel, Krager, 1972.

Suppes, P. and E. Machen. The Historical Path from Research and Development to Operational Use of CAI. EDUCATIONAL TECHNOLOGY, April, 1978. 9-12.

A VIDEOTEX BASED INSTRUCTIONAL SYSTEM FOR DISTANCE AND ON-CAMPUS EDUCATION

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1. Introduction

In this presentation I will review briefly an active field trial application of videotex at the University of Guelph. In this project the "piggyback" educational application for distance education will be discussed and for on-campus counterparts I will conclude with a description of a CMI application currently under development and study.

Videotex has been in use in Britain for several years under the name of PRESTEL.[1] In 1978 Canada announced its entry into the field with Telidon. Several demonstration projects were mounted and are still appearing, such as the Bell Canada VISTA field trial with 500 terminals in Toronto and Quebec City.[2] The Ontario Ministry of Tourism has a major information project operating in Toronto with terminals located in approximately 300 hotels, shopping malls and other public areas. TV Ontario is now in the early stages of a Telidon trial in 100 high schools whereby career related information will be available via user terminals. An ill-fated trial in the suburbs of Winnipeg, Project Ida, gave birth to the first commercial Telidon service called "Grassroots". This service provides agricultural information to 900 farmers and agribusiness establishments in Manitoba, Alberta, Ontario and Saskatchewan.

The "Grassroots" service is targeted on the agricultural community in contrast to the more general field trials with a wide spectrum of the consuming public. Evidence from "Grassroots" and similar trials indicates that such volatile information as weather, news and market prices are the most frequently sought after types of information and those which are valued most highly.[3]

Once a videotex system is in place it provides a one-spot information access point for a wide range of information from the specific types mentioned above to teleshopping, home banking, management programs and education.

2. UNIVERSITEL

In April 1983 the University of Guelph, in partnership with the operator of "Grassroots", Infomart, commenced a six-month joint venture to extend this Manitoba based system into Ontario. This involved both content expansion to serve this agricultural community as well as a physical extension of the service to a region 2000 km distant. The Guelph project is identified as UNIVERSITEL (University Telidon). Early work at Guelph by the University Library prepared the way for this participation. This activity included the establishment of contact with several database and field trial operators, the demonstration of Telidon as an information service, and a general awareness raising to the potential of this new technology.

The UNIVERSITEL service was recently extended to a second agricultural community in Southwestern Ontario some 250 km distance from the University. In addition a link to the University of Western Ontario has been established to include a journalism school news project called WESTEX.

The centre of the project is the "Grassroots" database in Winnipeg. It is located in two VAX computers operating under proprietary software developed by Infomart and sold to other operators in Canada, Switzerland and the United States. With 30,000 pages in its database at an annual operating cost of $1 million the "Grassroots" service enabled the

University of Guelph to rapidly achieve "state of the art" experience and exposure in a relatively short time.

For its part, in return for access to Infomart's database, the University established a 2000 km communication link between Guelph and Winnipeg; created a six-person page creation centre; undertook to enter generic agricultural information in the database; field-test the service in 75 farm homes in Ontario, and carry out research in educational applications.

Videotex is a technological system comprising a computer, computer stored data, a telecommunications' network and an interactive terminal device at the user's site of operation.

3. Educational Applications

Since videotex is a computerized information system capable of application in the home environment it has attracted attention as a new educational vehicle for distance education. The same properties of independent user access, user friendly features and computerized information retrieval have been heralded as potentially valuable for on-campus CAI applications.

Four specific roles have been identified for Telidon in distance education and are currently being tested and evaluated. The first of these is the provision of course related information. The University of Guelph, as part of its extension contract with the Ontario Ministry of Agriculture and Food, offers independent study courses leading to the Ontario Diplomas in Agriculture and Horticulture. Each year 6,000 adult learners enroll in 65 courses via this home study program. Instruction is given via specially prepared packages containing written material, audio tapes and low cost colour visual material filmstrip or colour microfiche form. UNIVERSITEL contains all course listings, a one "page" course description and information on diploma requirements.

A second role has been identified for Telidon and this is on-line registration for the courses. Registration and access procedures have been simplified to enable an individual to register or order a course from home on the terminal.

Delivery of course content is not envisaged at this time due to the high cost of telecommunications and page storage. Telephone line charges of $30 per hour per user places this facility beyond the capacity of many home users.* Computer storage costs of $2.00 per page per month, on a commercial service, suggest that a larger number of home terminals needs to be in place before cost efficiencies can be realized. Elsewhere in this Conference Sullivan[4] contends that fifteen years of effort in computer aided instruction have not produced the level of acceptance anticipated. The time involved in creating course materials in this format and the overwhelming change in instructor role suggest caution rather than haste in attempting to promote videotex on any large scale for content delivery of distance education.

Videotex may be used, however, to provide on-line delivery of graphic and visual support material in teleconferencing and here the University of Calgary is developing some useful application models. This approach utilizes group settings meeting simultaneously in several geographically distant locations. As an electronic audiovisual support resource videotex is worth considering if the content so justifies.

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* Other research at the University of Guelph, currently under way, indicates a cost threshold for general home use of videotex at less than $10 per month.

In our view the critical area for distance education is not content delivery but rather student feedback. The completion of assignments to be mailed in for assessment meets some of the needs of the institution for determining student achievement. It does very little of a helpful nature to provide the student with feedback from the instructor in a timely manner. This is amplified by the lack of personal contact among the learners and with the instructor such as one finds in a face-to-face instructional context. Thus the fourth area for considering Telidon in distance education is that of testing and feedback.

To examine the potential of videotex to address this need we are developing and evaluating test/feedback procedures for both on-campus and distance education purposes. We are using the UNIVERSITEL field trial to:

1. develop and test specific computer software in a "real world" environment;
2. develop and evaluate various page creation formats;
3. examine the potential for strictly instructional tasks to "piggyback" on a comprehensive electronic information system into the home environment;
4. explore the preparation of instructor created tests by the instructor on microcomputer page creation systems.

To date we have completed two successful trials with a specially designed testing package. The first of these was the presentation of a ten-item mastery quiz in the PSI component of a course in Technology in Extension Education. The course enrolled 50 students in the Winter of 1983. The PSI component contained six modules each with a 10-15 item mastery quiz. Credit required mastery at the 80% level and up to three attempts were allowed. If the initial quiz did not reveal mastery at 80% students were allowed to restudy and take another version of the test for that module. Three versions of each test were available so that students would not take the same test on the second or third trials. They were tested on the same content but with different test items. These were paper and pencil tests with feedback provided immediately by three graduate students. Feedback took the form of scoring each item, in the presence of the student, and, for missed items, a referral to the section of the text to be restudied. This procedure, while satisfactory in achieving the goal of providing feedback in close proximity to the test, is costly in marker time. Three test trial periods were available. The first trial was a regular morning class period which over the course of the semester was attended by half of the class. The other half of the class elected to take the test in two make-up or re-try sessions scheduled on Wednesday and Thursday afternoons.

From this observed pattern of behavior and discussion with the students it was inferred that the flexibility of the schedule was appreciated since it transferred to the student some control over their preparation and readiness for the test-taking. This flexibility was achieved at the added cost of the marking staff who required to be available for up to four hours outside regular class time.

The Telidon test trial was undertaken to explore the potential of videotex to reduce the time constraints and added costs associated with frequent testing and feedback. A Telidon session of test #5 was developed and used to replace one of the paper and pencil test sessions. In the presentation of the test the student uses a Telidon terminal with keyboard. A sign-on procedure uses individual ID numbers and passwords which enter the database via a default procedure directly into the test section. The student is presented with a frame of instructions and when ready to proceed depresses a designated key. The test administration is now timed, in this case, to a maximum of ten minutes. A correct response moves to the next test item while an incorrect response leads to a feedback frame.

In our trial of this procedure five students attempted the mastery quiz via Telidon, two completed all items correctly, two more met the 80% criterion and one subsequently received credit on a paper and pencil retrial. No further attempts were made with this test package since the semester was then complete.

The second trial with the system was completed last week with 15 graduate students in a course in Computer Based Learning Systems for Extension Education. This was the first offering of this special topics course in an intensive three-week summer school. The database software package was modified to provide a random pre- and post-test application. An item bank of 50 test items was drawn from the TV Ontario Computer Academy, formatted for Telidon and loaded into the Winnipeg database. Each student was assigned a separate ID number and given sign-on instructions. During the first class the students took a pre-test via Telidon terminals. Each test comprised 30 items randomly selected from the 50-item bank. Results of the pre-test show that, with a range of correct scores from 12-50% and a mean of 32.6, this group of students were unfamiliar with the common language and concepts associated with educational applications of computers. A similar test was administered at the conclusion of the course again using 30 items randomly selected out of the 50-item bank. The results of this post-test reveal the progress of the students as displayed in Table 1.

Some problems were associated with the administration of the pre-test. Insufficient debugging allowed some "correct", incorrect" feedback cues to misfire on the visual display. A paper readout, however, enabled manual scoring and, apart from the aggravation to the students, this did not disturb the accuracy of the record for the purpose of the pre-test. Debugging and verification of the feedback cues against the marking key enabled the system to perform without difficulty for the post-test.

Further applications of this procedure are being prepared for the Fall term 1983 in both on-campus and distance education modes. The distance application will be made operational on one of the Independent Study courses. The on-campus application will be available in a testing centre as part of the University's program to deal with increasing difficulty in administering weekly quizzes and mid-term tests in large enrolment classes.

The advantages to this approach which we are seeking to evaluate are:

1. Computer Managed Instruction involves lower development costs to Computer Assisted Instruction;
2. Telidon provides a new low-cost colour graphic and text authoring system which does not require computer programming skills;
3. Telidon-type tests require low connect time on the system thus large numbers can be served by relatively few terminals;
4. Frequent testing with immediate feedback to enhance learning is possible at low cost;
5. An on-line computer system such as Telidon provides 24-hour availability and removes the constraints for testing of distance education students.

To overcome the security problems associated with an open system such as described here we will examine two administrative procedures. First, the database software is capable of random test item selection from a large item bank with memory to eliminate, for a given student, repetitions of previously presented items. Second, since this approach is designed to foster learning rather than grade accumulation we tentatively recommend that minimal grade credit be associated with this component of the course. Our current experience suggests that a minimum of 15-20 per cent of the course grade be assigned to this type of test.

TABLE 1 Ext. Ed. 38-329 Computer Literacy Test Results

Ext. Ed. 38-329 Computer Based Learning Systems

	Pre-Test	Post-Test
Mean	31.4	82.9
Medium	30	81
High score	2 @ 50	2 @ 97
Low score	12	67

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References

1. "Welcome to the Financial Times Guide to Videotex" Financial Times, November 9, 1981.
2. Godfrey, David and Chang, Ernest. The Telidon Book Toronto: Press Porcépic Ltd., 1981.
3. CanWest Survey Research Corp. "The Evaluation of the Grassroots System" December, 1982.
4. Sullivan, Arthur M. "Educational Technology: Learning from our Success and Failures" 9th International Conference on Improving University Teaching, Dublin, July, 1983.

STUDIES OF UNIVERSITY LECTURING

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ABSTRACT

This seminar provides an opportunity to report research findings in styles of university lecturing; to demonstrate these styles, and to discuss the implications of the research for teaching and staff development.

The research, conducted at Loughborough and Nottingham Universities and based on a survey using a random sample of lecturers from both institutions identified three principle methods of lecturing. Five distinctive styles of lecturing were also identified. These were found to be related to subject area, marginally related to status of the lecturer, but unrelated to length of teaching experience. The survey also included semi-structured and open-ended questions on common weaknesses, likes and dislikes of lecturing and advice which respondents would give to new lecturers.

Each of the three co-presenters will describe the findings related to different faculties, covering arts, science and engineering, social sciences and medicine.

INTRODUCTION

Lecturing, small group teaching and laboratory teaching are the most common modes of teaching in Higher Education and of these lecturing is, without doubt, the most common mode. Each of these modes contains various methods of teaching. For example, lectures may be structured in at least three different ways. These may be described as classical, problem centred and sequential methods (Bligh, 1972; Brown, 1978) and each lecturer may use a particular method in his or her own characteristic way.

It is this 'characteristic' way which is at the heart of the study of styles. Kozma (1978) defines teaching styles as a pattern of instructional behaviours which are consistent over time and which provide a certain **flavour** to the teacher's classes. Our own working definition of style of teaching is "a relatively consistent set of responses to similar teaching tasks". It contains a combination of preparatory, logical-structuring and strategic acts (Green, 1972). It follows from this working definition that styles of lecturing are likely to be different from styles of small group teaching or laboratory teaching. It also follows that an appropriate method of studying styles is to ask lecturers a series of questions on how they prepare, structure, present and educe information.

In the study reported here we focussed sharply upon one mode of teaching in Higher Education: lecturing. In this paper we report our classification of lecturing styles and the relationships between the lecturing styles identified and subject specialisation, status and length of experience.

PROCEDURES

A survey instrument including sixty items concerned with different facets of preparing, structuring and presenting information in lectures was piloted and then sent to a random sample of four hundred lecturers in the Universities of Loughborough and Nottingham. The items included attitudinal statements such as 'I like lecturing' as well as specific items on preparing, structuring and giving lectures.

The responses to the sixty items were factor analysed using the oblique method to generate scales. The reliability of the scales was assessed by Cronbach's alpha. This procedure yielded six reliable scales based on forty two items. The scores for each of the scales were then used to cluster analyse the two hundred and fifty eight cases using the CARM relocation method (Youngman, 1979). Examination of the cluster analyses indicated that the five cluster solution was the most meaningful (Bakhtar, 1982).

RESULTS

Table 1 sets out the reslationship between the six scales and the five styles of lecturing which were identified. Positive and negative signs indicate that the cluster mean is higher or lower than the population mean for that particular scale.

The styles of lecturing that were identified were:

- Visual Information giver
- Oral Presenter
- Exemplary Performer
- Eclectic Lecturer

TABLE 1: Scales and Styles

	STYLES OF LECTURING				
Name of the Scale	Oral	Exemplary	Visual	Amorphous	Eclectic
News type	-	-	+		
Structured	+	+	+	-	
Purposive		+		-	
Visual presentation	-	+	+		
Self doubt	-	-	-		+
Presentation		+	-	-	

+ or - indicates that the cluster scores significantly higher or lower than the remaining clusters as tested by the appropriate version of Scheffe's multiple comparison procedure.

Amorphous Talker

The following are abbreviated descriptions of their main characteristics. Demonstrations of the different styles are provided on the ASTD videotape "Styles of Lecturing".

ORAL PRESENTER: This cluster of forty-five lecturers rarely used any means of communicating other than talk. They are fairly confident about the material that they are covering in lectures and they tend to work from a script. They are likely to define any new terms in their lectures but not to summarise at the end of their lectures or to use much repetition or restatement.

EXEMPLARY PERFORMER: This cluster of sixty-four lecturers tended to follow the advice given by the majority of the respondents in the open-ended questions on strengths, weaknesses, do's and don'ts. Hence we labelled them exemplary lecturers. They write down headings and brief notes rather than whole lectures, and think about and write down objectives.

VISUAL INFORMATION GIVER: This group of sixty lecturers provided detailed information to the students by giving them full notes on the blackboard or overhead projector. They tend to write down the whole lecture and they take full details of complex proofs into the lecture...

AMORPHOUS TALKER: There were fifty-nine lecturers in this cluster. These lecturers are superbly confident but not particularly adept at structuring or presenting lectures. They are confident about the topics that they are lecturing on and, of all the groups, they are the most likely to pretend to know the answers to a question when they do not...

ECLECTIC LECTURER: This group of twenty-three lecturers do not feel confident about their lecturing or that they achieve their objectives. They have difficulty in selecting and structuring materials. But they do try to prepare carefully their lecture notes and they are least likely to use only headings and sub-headings when preparing lectures...

COMMENTS ON THE RESULTS

The analyses of the responses to the items of the questionnaire provide strong evidence for the existence of distinctive styles of lecturing. Of the sixty items in the schedule, thirty-five yielded significant or highly significant differences. It should be borne in mind that the results are based upon the lecturers' own reports of their lecturing. However, direct observation of a smaller sub-sample of the lecturers did confirm the existence of these styles of lecturing - as indeed did discussion with lecturers on their styles of lecturing.

STYLES OF LECTURING AND SUBJECT AREAS

There were over fifty subject specialisations amongst the respondents. We divided these into four groups: Humanities; Social Sciences; Sciences and Engineering; and Biomedical Sciences. Table 2 shows the relationship between lecturing styles and subject area. It was highly significant (chi square = 71.64 d.f.) about one third of lecturers in Humanities and Social Sciences were oral lecturers and about one third of the lecturers in Humanities and Biomedical Sciences were exemplary. Scientists and Engineers were predominantly visual or amorphous in style The scientists had few eclectics and the humanities had the most eclectics. It was interesting to note the Humanities and Biomedical Sciences had most of both exemplary and eclectic styles of lecturing.

TABLE 2: Subject Areas and Styles of Lecturing

	STYLES OF LECTURING					
Subjects	Oral	Exemplary	Visual	Amorphous	Eclectic	Total
Humanities	22	20	6	8	9	65
Social Sciences	16	11	7	10	4	48
Sciences and Engineering	3	21	47	33	6	110
Biomedical Sciences	4	11	6	8	4	33
TOTAL	45	63	66	59	23	256*

* Two respondents did not indicate their subject

Chi square significant at 0.01 level.

When the [illegible] were tested individually against subject areas, twenty of the original [illegible] yielded significant differences between subject areas. Some of the differences are described below. Full details of the differences [illegible] and Bakhtar (1983).

Humanities

Lecturers in humanities use technical language more sparsely than scientists. They are much more likely to quote from texts than their colleagues in social science, science and engineering or medical sciences.

Social Sciences

Lecturers in social science, like their colleagues in humanities, use technical terms more sparsely than scientists and engineers. They are more likely to write headings and sub-headings only and less likely to give full notes or to use the blackboard for full notes than their colleagues in science and engineering.

Science and Engineering.

They are more likely to rely on one text for their lectures than lecturers in humanities and less likely to quote from texts. They are more likely to use diagrams to show processes and relationships than colleagues in humanities.

Biomedical Sciences

Biomedical scientists are, not surprisingly, similar in their pattern of responses to those of the lecturers in science and engineering. They are, however, more likely to like lecturing, regardless of the topic, than lecturers in science and engineering and they appear, as a group, to be less confident.

There were twenty significant differences in lecturing styles between humanities and other subject areas, thirteen between science and engineering and other subject areas and twelve between biomedical sciences and other subject areas. The main differences in lecturing styles appear to be between the scientists and engineers and the other subject areas. Scientists and engineers differ from lecturers in humanities on fourteen variables, from social scientists on eight variables and from biomedical scientists on seven variables.

STYLES OF LECTURING AND EXPERIENCE

The sample of lecturers was divided into four groups according to years of experience. The groupings were 0-3 years; 4-7 years; 8-10 years; and over 10 years. There were no significant differences between styles of lecturing and years of experience. The analysis of the sixty items yielded only two significant differences and even on these variables experience did not have any systematic effect. The most experienced and least experienced lecturers reported more frequently than the middle groups and they considered lecturing to be an efficient method of teaching and less frequently that they used diagrams to show relationships or processes. Table 3 summarises the relationship between lecturing styles and exoerience.

STYLES OF LECTURING AND STATUS

Three categories of status were used: Professor, Reader or Senior Lecturter, and Lecturer. Table 4 sets out the results. There was some association between status and lecturing style (chi square 14.58 at 8 d.f. p 0.07). Most of the Lecturers had visual styles and most of the Professors and Senior Lecturers had an exemplary style. The Professorial

TABLE 3: Lecturing Style and Experience

	STYLES OF LECTURING					
Experience	Oral	Exemplary	Visual	Amorphous	Eclectic	Total
10 years or less	27(60)	25(39)	29(44)	31(53)	7(29)	119
More than 10 years	18(40)	39(61)	37(56)	28(47)	17(71)	139
TOTAL	45	64	66	59	24	

Figures in brackets give percentages of each lecturing style.

TABLE 4: Relationship between status and clusters by percentage

		STYLES OF LECTURING				
Post	N	Oral	Exemplary	Visual	Amorphous	Eclectic
Professors	32	9	41	16	19	16
S.Lecturers/ Readers	65	17	31	25	17	11
Lecturers	146	19	18	29	27	8

group also contained the highest proportion of eclectics and the Lecturers had the highest frequency of amorphous style.

DISCUSSION

This paper has outlined some of the findings from our survey of lecturers' self-reported perceptions of lecturing. The findings should be treated with a little caution since they are based upon a relatively small sample of two hundred and fifty eight respondents drawn from only two Universities. The use of one-way analyses of variance to highlight differences between subject areas, experience and status did not permit the study of interactions between these variables. Nonetheless this study does provide clear evidence of the existence of different styles of lecturing in different subject areas, in particular there are marked differences between the styles of lecturing of lecturers in Humanities and in the Sciences. However, as subsequent papers will show, lecturers in various subjects do use similar methods of lecturing and they report similar likes and dislikes, weaknesses and advice to young lecturers.

Perhaps the most interesting finding of the survey is that styles of lecturing are dependent upon the subject being taught but not on the experience of the lecturer. This finding implies that styles of lecturing are likely to be acquired relatively early in the career of a young lecturer. Indeed it is likely that they are related closely to styles of learning (Entwistle, 1981).

The findings on status and lecturing styles **suggest** there is a slight tendency for some Professors and Senior Lecturers to be more exemplary in their lecturing style. An alternative interpretation is that they are better at giving 'correct' responses. In our view, this latter interpretation is unlikely. It is possible that some Professors and Senior Lecturers do have a deeper understanding of their subject than some Lecturers and that they are also able to communicate their understanding. The relatively high proportion of the eclectic style of lecturing which also occcurs amongst Professors and Senior lecturers may be, in part, attributable to the pressures of other duties. On the other hand it may be that self doubt, a key constiturnt of the eclectic style is sometimes a product of deeper knowledge of a subject and of the process of teaching. Clearly the above statements are speculative. Further research is necessary to identify the reasons underlying these results.

The survey has provided the first empirical study of lecturing styles (Ebie, 1976; Davies, 1981). It has revealed differences in styles across subject areas. It has provided profiles of lecturing styles in different subject areas and it has demonstrated that experience is not, per se, an influential variable. In other words, a lecturer may be no better at lecturing after ten years of experience than he was after only two years of lecturing.

However, it is important to bear in mind that these results are based upon the reports of lecturers on their own lecturing and not upon direct observation by independent observers. Hence the report is concerned essentially with how groups of lecturers see themselves rather than how others see them. Further research is necessary to determine how accurate are lecturers' views of their own lecturing. We suspect that some individual's views will be wildly inaccurate but that results based on groups of lecturers will prove to be accurate.

The use of self-reports in this survey also raises the deeper problem of the effects of experience upon perception and awareness. As experience is gained, it is likely that some people (but not all) become more sensitive in their perceptions and more aware of the subtleties of content or process. Hence their responses to items of self-appraisal or open comment may have deeper meanings than those who are less experienced and less sensitive. Conscientious lecturers might rate their capacity to structure lectures as moderate because they are aware of the problems involved. Less sensitive lecturers may rate their capacity to structure lectures as good because they are unaware of the subtleties involved. Self deception may well be part of their self perception.

These remarks are relevant not only to studies of lecturing but to any study involving self-report such as studies in medicine, industrial management, production engineering or psychology. All that one can do is build various safeguards into the system of self-report and into the analyses. In this study the use of structured and open-ended questions served this purpose and in our statistical analyses we did cross checks on various sub-samples to verify the stability of the clusters of lecturing styles.

BIBLIOGRAPHY

BLIGH, D.A. (1972) **What's the Use of lectures?** Harmondsworth, Penguin Books.

BLIGH, D.A. (1980) Methods and techniques in post-secondary education. **Educational Studies and Documents** No 31. UNESCO, Paris.

BROWN, G.A. (1978) **Lecturing and Explaining**, Methuen, London.

BROWN, G.A. (in press) Lecturing in Postlethwaite, N. and Husen, T (eds) **Encyclopaedia of Educational Research**. Maxwell, London.

BROWN, G.A and BAKHTAR, M. (1983) **Styles of Lecturing: Research and Faculty Perspectives** Loughborough University of Technology.

DAVIES, L. (1981) Teaching and Learning Styles. University Education News. Council of Ontario Universities Vol. 1, No. 2, 1-4.

EBLE, K. (1976) **The Craft of Teaching: A Guide to Mastering the Professor's Art**. Jossey Bass Publications, San Francisco.

ENTWISTLE, N. (1981) **Styles of Learning** John Wiley & Sons, Chichester.

GREEN, T. (1972) **The Activities of Teaching:** McGraw Hill, New York.

KOZMA, R.B., BELLE, L.W., WILLIAMS, G.W.. (1978) **Instructional Techniques in Higher Education**. Educational Technology Publications, Englewood Cliffs, New Jersey.

YOUNGMAN, M.B. (1979) **Analysing Social and Educational Research Data**. McGraw-Hill Book Company Ltd.

NOTE:

The full results of the research programme described in this paper are published in the BOOK **Styles of Lecturing**. This includes a Research Report, four Faculty Perspectives on the research, and a discussion of its implications.

The five styles of lecturing identified in the research, and described briefly in the paper, are demonstrated in a half-hour colour VIDEO PROGRAMME.

Further information and purchasing details on both the book and the video programme may be obtained from:

Academic Staff Training and Development Programme,
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UNITED KINGDOM.

FACULTY DEVELOPMENT AND FACULTY MOTIVATION

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My own direct work with faculty development began in 1969 when I began directing a two-year Project to Improve College Teaching. This nation-wide effort, sponsored by the Association of American Colleges and the American Association of University Professors, included faculty development as one of its major objectives. In the book that emerged from that work, _Professors As Teachers_ (Jossey-Bass, 1972), I listed those needs the project had identified as important to faculty development: (1) the need to improve the preparation of teachers in graduate schools and to make better use of the teaching assistantship; (2) the need to examine professional values and to alter the reward system so that effective teaching is adequately recognized and rewarded; (3) the establishment of adequate career development systems as part of regular institutional policies and practices; (4) leadership from deans, department chairmen, and other administrative officers and faculty in supporting and encouraging teaching excellence; (5) increased flexibility in practices and structures so that ways are available to draw upon the diverse talents of faculty members and to meet changing interests, competences, and needs at various stages in the teacher's career; (6) examination of the myths and stereotypes which adversely affect teachers and teaching.

Here, I will only look at the third and fourth of these needs: the establishing of faculty development systems and the developing of administrators as motivators of faculty.

In a survey of faculty members from 112 United States colleges and universities in 1979, almost all responded negatively to the main question, "My institution (does, does not) have an effective faculty development system."

The findings of the project were in accord with those coming out of a survey of small colleges in the south in 1963 (Miller and Wilson):

> While there are activities in these colleges directed toward establishing or improving approaches to faculty development, these activities are, in the main, uncoordinated and lacking in creativity. . . . Often reliance is placed on a limited number of relatively routine procedures and emphasis tends to be placed on procedures related to the process of orienting faculty members to the institution -- an important but limited aspect of the process of development.

There was an upsurge of faculty development activities in the seventies, though by the end of the decade, many faculty development efforts had been cut back because of financial exigencies. It is probably as true now as it was in 1972 that "such an obvious and important practice as setting aside a portion of the budget for faculty development is rare" (Eble, 1972).

Since 1979 I have been heavily engaged in working with a faculty development project funded by the Bush Foundation in North Dakota, South Dakota, and Minnesota. Foundation policies have confined the grants to these three states, but almost all of the collegiate institutions within these states have received substantial grants ranging from about $75,000 to almost a million dollars for a three-year period. At present, an overall evaluation of the project's success is being conducted. My observations about motivating faculty are shaped by conclusions emerging from this on-going evaluation.

Motivating faculty is central to all faculty development efforts. That may be why faculty ownership and voluntary participation are a marked feature of all of the Bush programs. Most of the grant proposals come out of a needs assessment made by faculty leading to specific proposed activities designed to meet these needs. The most common response of the faculty is to ask for funds to support professional growth in conventional ways: grants and/or released time to enable individuals to engage in scholarly or instructional development activities; travel to libraries and professional meetings and for consultation with other faculty; funds for visiting scholars, workshops and the like. As colleges ascend the prestige scale, support of research and related professional activities is regarded as most important even when developing teaching competence is a program's stated aim.

It should be said that faculty development has strongly implied the development of teaching capacities and instruction rather than research. That is partly because the impetus for faculty development in the seventies came from concern with the quality of teaching and because support of research has long been a part of many college and university budgets, though on a very small scale as regards most small colleges. In this respect, the sabbatical leave has most served the general purpose of renewing a professor's overall capacities and the specific purpose of affording an opportunity for specialized scholarly work. Sabbaticals, however, probably only exist in about 50 percent of colleges and universities.

These general observations hold true for the 30 institutions within the Bush program. The University of Minnesota had substantial research funding, much of it coming from outside sources and unevenly distributed across the faculty. At the other extreme, the majority of small denominational colleges had no such funds. A majority of institutions, small and large, had sabbaticals, but few were generously funded or awarded, and in some prestigious institutions, faculty were not taking the sabbatical opportunities that were provided. In almost all institutions, but much more marked in the prestigious ones, faculty were inclined to favor activities that furthered their individual scholarly development over those that might develop teaching skills or course improvement.

As to what emerged in the interplay between faculty members' sense of what would best serve their development and the Foundation's insistence that the faculty development should eventually benefit student learning, the following tentative conclusions can be drawn.

First, direct grants of various kinds seem to be the item of first choice among faculty. A great many faculty have projects, small and large, for which ordinary institutional support and motivation appear not to be present. These projects incline toward furthering of individual, disciplinary research, but they include a variety of activities aimed directly at improving instructional competence and indirectly at improving student learning. The presence of a grants program and even of modest size -- an upper limit of $2,000 for example -- is an important source of motivation for the faculty at large.

Second, a structure for stimulating, helping shape, processing and awarding grants is vital to motivating a faculty. In many small colleges, faculty members need some encouragement to apply for a grant. Often, they arrive at better proposals through the help of faculty colleagues. At all institutions, the means of reviewing and awarding grants needs to be repected by the faculty as being both accessible and fair. In virtually all of the institutions, faculty control of grants is favored over administrative control. Most of the development plans have a part-time director identified with the faculty and a faculty committee or advisory board that administers and sets policy for grants. As regards motivation, faculty seem to prefer being motivated by colleagues, perhaps because of the negative connotations attached to formal evaluative activities for which administrators are responsible.

Third, faculty respond to the motivation provided by group activities, whether they be in the form of lectures or workshops featuring outside visitors or in informal gatherings which foster social and professional exchange. A continuing note of individual isolation, of a lack of colleagueship, of an absence of opportunities for formal and informal interchange among faculty was present on all campusses. The various activities proposed to increase socialization seemed to rest on a belief that faculty interchange was an important source of motivation.

Fourth, a somewhat neglected aspect of faculty development is the need to develop administrators as motivators. Too few chairpersons and deans among the many encountered within the Bush projects perceived of motivating faculty as a vital part of their administrative skills or felt comfortable in dealing with motivation even when they recognized its importance. This may chiefly reveal a lack of systematic effort to give faculty even rudimentary preparation for the administrative jobs they take on. A few national and regional programs for chairpersons exist, but these probably reach as small a percentage of chairpersons as are reached by institutional pre- or in-service programs. The development of chairpersons and deans as motivators remains a resource from which much more might be expected.

Finally, a decade and more of purposeful faculty development, however short it may have fallen of establishing development as an institutional responsibility, has provided much insight into what motivates faculty. Intrinsic rather than extrinsic motivation appears to be the strongest driving force, but under the conditions prevailing in many colleges, a great strain is put upon intrinsic motivation. In many a hard-pressed college, even the presence of a supportive faculty development program raises faculty morale and often sufficiently to support those inner urges which excellence in teaching and scholarship depends upon. Further, the experience with grants shows how relatively small amounts of money motivate the faculty to carry out useful tasks that would otherwise remain undone. The activities carried out by individuals do tend to attract other individuals. Along with purposeful attention to bringing people together, the reinforcing effects are an important aspect of motivation.

Eble, K. E. *Professors as Teachers.* San Francisco: Jossey-Bass, 1972.

Miller, W. S. and Wilson, K. M. *Faculty Development Procedures in Small Colleges: A Southern Survey.* Atlanta, Ga.: Southern Regional Education Board, 1963.

KEEPING FACULTY SAFE FROM SALVATION

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Diane Arbus, the great American photographer, has shown in her work that "the more specific something is, the more general it is." I want to use that insight in this presentation by introducing the subject of motivation through the professional journey of one person, a university colleague, who is a glass artist and teacher. Later, after presenting a faculty member who calls herself Wonder Woman, I will contrast the assumptions about motivation that influence the colleges where these two individuals work.

The story opens a few years ago in a busy studio. "I've blown all the shapes I can imagine. Big bubbles. Little bubbles. Little Platters. People call from all over the country wanting my work. I have more invitations to shown than I can remember."

You look upset," I said.

"If I don't do something different, I'll end up making these same forms for thirty more years. I wonder what else I can do with the glass."

He was at a turning point in his work I realized in the next few weeks. Every time I went to the studio, he was bending metal sheets into round receptacles, covering the bottoms with fine sand.

"What's that sand for?"

"It's a mold."

"For what?"

"I'm going to pour glass into it and see what happens."

"Oh."

A few days later, he came to my office. He wanted me to watch him pour the first casting. The studio is a marvelous place. Crowded with students and blazing furnaces, it is a good place to clear abstractions out of my head, to be reminded of the power of the concrete and the specific.

"Hold up the lid," he said, pointing to the new oven on the floor. "It's going to get hot."

He walked to the furnace and inserted a ladle on a long rod. It came out filled with fiery glass which he poured onto the sand in the bottom of the oven. He repeated the transfer several times until there was a pool of liquid glass an inch thick covering the mold. "That's enough," he said. His eyes blazed. Sweat ran from his beard. He looked excited.

The glassworker struggled for months with the cast forms because all of them cracked during the long cooling cycle. I visited the studio often during that period, always pleased when he lifted the oven lid long enough for me to glimpse the cooling mass, its color patches glowing just below the clear surface like melted jewels.

"Can you tell yet if this one will be O.K.?" I asked. "No, not until the cooling is done," he said.

One day he came to get me because he was about to pour a casting into a new vessel. "I think I've got the problem solved now. I'll let this one cool for two weeks." As he carried the molten glass across the studio, his face glistened from the heat.

I went to the studio every day. "Let's peek at it this morning," he liked to say. "I've never seen such colors." Neither had I. The glass disc glowed in the bottom of the cooling oven: cobalt blue, copper yellow, a smude of bright red near the center. Light from the furnaces made the crystal surface smolder.

On the last day we walked to the studio in silence. He stood by the oven for a few moments, his big hands hanging down like hammerheads. The lid made a shrill noise when he lifted it.

The disc was fractured through the center. I winced. He spoke first.

"Look at that."

"At what?" I asked.

"At the way the colors look at the break."

"What do you mean?"

"They seem more intense. I wonder what would happen if I tried to crack these things on purpose.

The artist and I regarded the fissure in completely different ways. To me, it was a destructive slash that ruined the object beyond repair. To him it was an occasion for looking at the glass in a new way. I wanted to stop coming to the studio because my disappointment was so keen. He was eager to pour the next casting.

That was three years ago. This spring I went to the studio to say hello after a long absence. He had more space, more students, more metal ovens. The newest one looked like a metal swimming pool. Only the welded seams interrupted the glare.

"What are those for?' I asked, pointing to the red and blue wires running to a metal box.

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"They connect the oven to the computer," he answered. "Each wire regulates one of the heating elements. We'll be able to cool the glass in zones now. It will take a day or two instead of two weeks." "No kidding," I said.

"Have you seen that?" he asked, gesturing toward a new casting across the floor. It was a pale green panel, a relief of a human figure.

"It's a woman," I said. "Why is the glass opaque?"

"That's _pate du vere_," he replied. "It's made by annealing crushed glass. Switch on the light on the other side."

The glass gathered the light, exposing the figure of a woman draped in a thin garment. "That's lovely," I said.

"Isn't it amazing what you can do with the glass?" he asked.

My heart was racing.

What can we learn about motviation from my colleague? To begin, we can acknolwedge the transforming power of an apsiration that arises deep within a person. I prefer the French word _motif_ to the English word _motive_ for naming this aspiration because _motif_ emphasizes the presence of a dominant idea or central theme. My colleague's _motif_ was evident years earlier when he began to wonder "What else can I do with the glass?" It enabled him to persist through 20 months when nearly every casting cracked. Eventually this _motif_ enabled him to transform his discipline by expanding the answer to a fundamental question in any field, "to what new uses can this be put?"

We can also learn to be patient, a term seldom spoken by those who demand "more productive" faculty. Imagine how some authorities would respond to an annual report that said "everything I tried to do this year failed, but I have learned from those failures. I hope next year to get it right." The glassmaker's patience, like the scientist's and the architect's, springs from a profound respect for questions. Recall Rilke's famous passage in Letters To A Young Poet:

> Be patient toward all that is unsolved in your heart and try to love the questions themselves like locked rooms and like books that are written in a very foreign tongue. Do not now seek the answers, which cannot be given you because you would not be able to live them. And the point is, to live everything. Live the questions now. Perhaps you will then gradually without noticing it, live along some distant day into the answer.

What more important awareness can faculty awaken in students who must make their way in a world strewn with daunting questions, such as "how shall we make more likely the survival of the human species?" The danger today is in the "solutions" we have devised, like nuclear missiles, before we have examined throughly the questions themselves. The glassworker's students learn more than technical knowledge from this man whose artistic work and teaching reinforce each other. "It was a student who suggested the crushed glass," he told me.

He also teaches us the value of colleagueship in the developm[illegible] a *motif*. His studio is not only crowded with students, but with sculptors, electricians, cabinet makers, metalsmiths, physicists. While not knowledgeable about the technology of casting glass, they are interested enough in aspects of it, and fond enough of this openhearted person to offer suggestions and encouragement. A few months after he learned to prevent the castings from cracking, the glassworker installed a show in a gallery. "Come over and see my new work," he told a colleague. The person came the day before the opening and studied every piece. Then he said, "Those metal frames are hideous. They spoil the glass. Pry them loose, then close the show." He did. "It was good advice," he said. "I had been so fascinated by the process I neglected the presentation."

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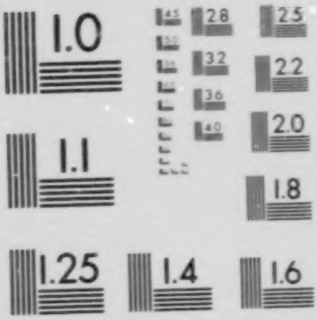

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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS
STANDARD REFERENCE MATERIAL 1010a
(ANSI and ISO TEST CHART No. 2)

I want to distinguish _motif_-ated activity from activity motivated by institutional pressures. Motif-ated work is more intense, more important to faculty themselves, to their students, to their disciplines. It is more disturbing. Ortega's metaphor of "becoming shipwrecked" in the material respects the painful birth of a _motif_. Work motivated by external forces is less stimulating.

Listen to another person I have interviewed:

> Do you know what a 24-hour scholar is? That's someone who spends all the time writing articles and grant proposals. They eat, drink, and breathe the stuff. They don't go to the plays or concerts. They don't read _Atlantic_ or _New Yorker_. They don't play with their kids. They're not much fun to be with.
>
> That's the way it's getting around this place. You wouldn't believe how many people are being torn up by the pressures. You never feel you've done enough. I'm willing to work twelve hours a day, but that's it. I want to be a thoughtful human being.
>
> Being a college professor is drudgery. You can never take a deep breath. Do you realize I've had an intellectually rewarding discussion with three of my colleagues, that's all, in the years I've been in the department? Do I want thirty more years like that? No way. There's got to be more than that.
>
> What really hit me recently, though, is how much of my time has been spent mounding up visible achievements, lengthening my resume, making a good impression on others. The process makes you so damned self-centered, so preoccupied with your own visibility, that it's easy to neglect your own sides. I've spent years hiding my deficiencies from colleagues. I hope I can learn to be myself again, and not Wonder Woman.

Wonder Woman and the glassworker are members of different colleges. Both colleges have wanted faculty to become more productive professionally. Both have succeeded. Their annual reports are thicker than ever. But morale is lower in her college, whereas in his students seem more spirited, more venturesome as thinkers, more like the faculty.

Why? In part, I want to suggest, these differences can be explained by examining the underlying assumptions about "motivating faculty in a time of adversity." One college is seeking motivation, the other _motif_-ation.

Here is the theory of motivation I see in Wonder Woman's college:

1. Expect all faculty to be visible scholars in a discipline
2. Respect results
3. Set standards that only a few can meet
4. Acknowledge officially all accomplishments
5. Take good teaching for granted
6. Depend heavily on goal setting and evaluation conferences and on memos
7. Stress faculty evaluation and accountability
8. Hire people who fit in
9. Speak openly about the senior deadwood
10. Foster competitiveness
11. Talk about excellence
12. Insist on annual results
13. View the department head as the chief motivator, evaluator.

The trouble with this theory is not that it does not work. It works well: faculty have been more active in their fields. But many of them are isolated from colleagues, unstimulated by them or their own professional work. In their rush to produce they have neglected to connect their work with themselves or with students. "Teaching takes time I should be devoting to research," they tell me. Even the "rewards" they receive--a few extra salary dollars, a note from the dean--do not compensate them palpably. Intrinsic satisfaction has declined.

Here is the theory of motif-ation I see in the glassworker's college:

1. Expect all faculty to think seriously about the disciplines
2. Respect faculty
3. Set standards many people can meet

4. Avoid formulaic acknowledgements
5. Foster discussion about good teaching
6. Depend heavily on directness, on face to face meetings, most of which are informal
7. Stress practices that foster faculty creativity
8. Hire people with unique perspectives
9. Speak respectfully about senior members
10. Foster collaboration
11. Talk about the faculty's actual work
12. Be patient toward results
13. View the department head as chief network builder and resource garnerer.

This theory also works. You see it in the energy of faculty; in their respectful allusions to one another's work; in the bold motifs that brighten their conversation; in their stormy debates. My main impression is that the college makes important things happen to people, including me: to their eyes and ears, to their thinking, to their views of the disciplines, to their assumptions about learning.

The other college affects the faculty's resumes more than their angles of vision. On one of my visits with Wonder Woman during her tenure review I asked her how things were going, pointing to a loose leaf folder the size of a suitcase on the desk. It was bright blue and slicked with acetate, like a new car. Its edge was studded with colored plastic index tabs that said STUDENT EVALUATIONS, COMMITTEE ASSIGNMENTS, PUBLICATIONS, LETTERS OF SUPPORT, COURSES TAKEN, SYLLABI, PUBLIC SERVICES. She said, "It's all there Jack, the years of my life, all sorted out." Later as I thought about that moment I realized what troubled me about it, apart from the hyperbole. There were some index tabs missing: Philosophy of Education, Professional Hopes, Fragments From a Journal. Of course some of these sections would be inappropriate, but it occurred to me that a teacher is more than a collection of visible parts. At times it seems we have lost sight of this, as though we are more interested in bibliography than biography.

If, like me, you prefer the vitality of *motif* to the colder italics of citations whose main motive is an external standard, then I hope you will join me in finding ways to keep faculty safe from that salvation.

101/#5/0

A PSYCHOLOGICAL ANALYSIS OF FACULTY MOTIVATION

Paper to Seminar on Motivating Faculty in a Time of Adversity

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Abstract
1. The Irish Context It is only recently that Ireland has caught up with the adverse conditions familiar to academics elsewhere for at least a decade. The situation in Cork is typical of the country as a whole: state funding, the main source of university income, has been cut back, staff recruitment has been severely curtailed, and steep annual increases in student fees must surely soon affect student recruitment.

2. The Nature of Motivation In the absence of any new theories of work motivation, I examine the applicability to universities of classic theories such as those of McGregor (Theory X: workers are lazy and shiftless; Theory Y: workers are self-motivating and trustworthy) and Herzberg (Two-factor theory: satisfiers--e.g. promotion--increase motivation when present; dissatisfiers--e.g. status--decrease motivation when absent). Adverse external circumstances can be included as influences on faculty morale. Motivating professors may not be different in principle from motivating students, and so examining the demands placed on the latter may be instructive.

3. The Role of Institutional Structures in Motivation. Power, communication and reward structures can promote or hinder faculty motivation, and their influence may change or be enhanced at a time of retrenchment.

4. The Role of Individual Factors in Motivation. Individuals differ in the needs they experience in the institutional setting, and therefore in what motivates them; and they are also likely to respond in different ways to adverse circumstances. Apart from these inner sources of motivation, academics are occasionally stimulated by external events--such as involvement with a particularly rewarding class of students, or committee of colleagues--which revitalise their job involvement. This kind of occurrence is difficult to programme, but when it does occur it is a strong antidote to gloom and doom.

In considering the theme of this seminar, I find myself wondering exactly what difference adversity makes to the maintenance of staff (i.e. faculty) motivation.

I incline to Woodbury's view: "It is not clear to me that the task is much different whether the college or university is facing a good or a bad economic climate". (1979, p. 259). I have therefore taken the liberty of assuming that my task is to examine general issues to do with the motivation of university staff, and refer to the recession only where it seems especially relevant.

I begin with a brief introduction to certain aspects of the Irish university system, partly because they will be relevant to some of the examples I want to cite later in the paper, and partly because it may be useful for conference delagates visiting this country to know something of the idiosyncrasies of universities here. The paper continues with a section in which I relate some psychological views on the nature of motivation to a variety of published studies in the field of higher education. The last two sections of the paper focus on the role which institutional structures and the characteristics of individuals can play in staff motivation, and here I will illustrate my arguments with examples drawn from both the literature and my own experience. This experience has been entirely in the university system, but I hope it will ring true for those in other sectors of third level education also.

1. THE IRISH CONTEXT

In general, the Irish university system is modelled on that of the U.K. However, Irish institutions missed out on the rapid growth which occurred elsewhere during the sixties. It is a slight consolation that the recession has only begun to hurt universities here since about 1980.[1] However the state has now imposed severe curtailment of recruiting, and there have been cuts in funding, although at the time of writing no redundancies have taken place. Staff are paid according to incremental salary scales which differ only slightly between institutions, and tenure is normally granted within three years of initial appointment.

Active trade unions seem to be viewed by university administrators in the U.S.--with lack of enthusiasm (Richman & Farmer, 1974, pp. 145, 271) or clear antipathy (Hartnett, 1975)--as an index of staff dissatisfaction. The vast majority of Irish academics have been affiliated to one of two unions since the mid-seventies: junior staff in two institutions joined the Workers' Union of Ireland because, as I understand it, they were dissatisfied with their status. Most other staff are members of the Irish Federation of University Teachers (IFUT) which was established as a professional association in 1965 and became a registered trade union in 1974. To date there has been little in the way of militant activity--indeed my chief memory of recent IFUT activity is the mediation of my local branch chairperson in a dispute between the College administration and another campus union! So trade unions are well established in Irish universities but have not defoliated the groves of **Academe** so far. Doubtless this will change if retrenchment bites much deeper.

My own institution, University College, Cork (U.C.C.) is one of the three constituent colleges of the National University of Ireland. It has 5500 students and 350 staff in its Faculties of Arts, Celtic Studies, Science, Engineering, Medicine, Commerce, Law and Dairy Science. State grants constituted 76% of the College's income in 1981-82, and the government has insisted that the 13-15% of income provided by student fees be maintained in real terms by steep annual fee increases in recent years. As a result student enrollments have begun to decline. Admission to Irish universities is selective for most students and they represent about 13% of their age cohort. Over 50% of the population are less than 25 years old.

2. THE NATURE OF MOTIVATION

"Human motivation can best be understood in terms of the needs we have in common and the different means by which these needs are satisfied. When a need (a physical or psychological deprivation) is aroused, an individual develops a drive toward a goal or incentive (that which is perceived as capable of satisfying the need or removing the deprivation). This process by which behaviour is energized is called motivation" (Williams,1978,p.95).

In examining the notion of motivation and its application to higher education, I will first introduce Maslow's contribution to our understanding of needs. Then I will consider three common needs--for power, achievement and affiliation --in the context of a study of university administrators. The findings of this study also illustrate McGregor's Theory X and Theory Y, which I will review briefly before going on to discuss prestige, a very important motive in universities. Next I will consider Herzberg's two-factor theory, and finding it wanting will pass on quickly to examine the usefulness of categorising motives as intrinsic or extrinsic. Finally I will draw some parallels between motivation of staff and students.

(a) Biological and Self-Enhancement Needs. Maslow's hierarchy of human needs (1970) is by now quite well known. Unfortunately the details of his account have not received strong confirmation from research studies; however there is evidence from occupational settings (Williams, p.105) which appears to confirm his general distinction between lower, biological needs and higher, self-enhancement needs, the lower needs requiring satisfaction before the higher needs can come into play.

(b) Power, Achievement and Affiliation Needs in the University. Williams (p.93) suggests that these are three enhancement-type needs which manifest themselves frequently in human organizations. It is tempting to suggest that university staff with a strong need for power are to be found in administration; those with a need for achievement in research, and those with a need for affiliation in teaching --but this equation is almost certainly too facile. It does seem more appropriate, however, to match the three needs with a typology of university presidential styles put forward by Astin & Scherrei (1980).

This study used questionnaires and interviews in 49 small American colleges to identify four types of president, which they labelled the Bureaucrat, the Intellectual, the Egalitarian and the Counsellor. Statistical analysis of the data suggested the following profiles. The Bureaucrat works with an inner circle of trusted confidants and is seen by staff as remote and ineffective. The staff tend to spend a great deal of time on administration and are dissatisfied with their jobs, The Intellectual is concerned with academic issues but reports frequent frustration in his contacts with staff. These spend much time on research and are pleased with institutional support for it, but are displeased with their salaries and fringe benefits, and there is a high turnover of personnel. The Egalitarian interacts widely in a nonauthoritarian way with staff who spend a lot of time teaching and are content. The Counsellor is an elder statesman whose preference is for personal conversations and informal meetings. His staff report the most satisfaction of all respondents.

Through its use of correlational measures, this study demonstrates an association between particular presidential styles and particular levels of staff satisfaction. What it does not demonstrate is that presidential styles cause the differences in staff satisfaction. With this limitation of the study in mind, it is interesting to speculate about possible causal relationships between needs, presidential styles and staff satisfaction. It seems logical to link the Bureaucratic style with the need for power, the Intellectual style with the need for achievement, and both the Egalitarian and Counsellor styles with the need for affiliation. If this association is correct, we might also wonder whether power and achievement motives in senior administrators are destructive of the morale of their staff, whereas affiliation motives are supportive thereof. It would be interesting to see the results of empirical research on this issue. In the meantime, readers might like to consider how well this analysis applies to their own institutions.

(c) Theory X and Theory Y. The Astin & Scherrei study illustrates a second well known account of motivation, that of McGregor (1960). He suggested that managers operate according to one of two views of human nature. Theory X states that employees are lazy, irresponsible,and must be closely supervised and controlled. Theory Y, on the other hand, emphasises the responsible, creative, self-directing qualities of the employee. Again we might speculate that Bureaucrats and to some extent Intellectuals employ Theory X, while Egalitarians and Counsellors operate according to Theory Y, and by doing so the two groups generate opposite reactions in their staff. It is important to note,however (Williams, 1978, p. 13), that there actually are some employees for whom Theory X is true, and these will not respond to Theory Y assumptions. Richman & Farmer (1974, p. 147) suggest that presidents need to have the courage to fire Theory X academics!

(d) Status and Prestige. Caplow & McGee (1965, p. 7) found prestige to be a central motive in academic life. They distinguish (p.62) between status, which is a function of the internal pecking order in an institution, and prestige, or external standing in a large social group. Status is important within institutions, and so an administrator trying to introduce changes will need to respect "the principle of status conservation" or risk generating enormous resistance. Prestige,on the other hand, is a scholar's standing in her discipline or the wider academic community, and is much more highly esteemed. A number of writers have distinguished between those staff who give their allegiance to their institution and those with high prestige whose allegiance lies beyond. Caplow & McGee (p.71) refer to institutional and disciplinary orientations; Nisbet (in Lee, 1967, p.29) speaks of locals and cosmopolitans, and Richman & Farmer (pp.204,265,271) refer to insiders and outsiders. Trotter (in Knapper et al., 1977) points out how paradoxical the prestige system must seem to the public. "surely, if the traditional notion of a university as a community of scholars of many different disciplines has any reality or validity, university teachers owe...loyalty...to their university. If they do not, then what right have they to claim a share in its governance? Why should students, or alumni, see an institution which they cherish, which they and their parents are paying to support directly and through taxes, run by people whose primary concerns lie outside the university altogether?" (p.157). This view may seem more and more compelling to the public and to legislators in a time of adversity, so that they will seek to increase institutional activities at the expense of disciplinary ones,but it will be difficult to shake the established value system. Prestige rules OK.

(e) Satisfiers and Dissatisfiers Herzberg's two-factor theory (1968) is a third major account of work motivation. This theory distinguishing between two qualitatively different influences on motivation: satisfiers (task factors such as an interesting job) whose presence is positively motivating but whose absence is irrelevant to motivation, and dissatisfiers (background factors like pay) whose absence is negatively motivating, but whose presence is irrelevant to motivation. Williams (1978, p. 106) notes that the theory has been very heuristic, but it is not well supported by research. It is not always easy to classify a given motivational influence unambiguously as a satisfier or a dissatisfier. Thus, Herzberg considers promotion to be a satisfier, and status a dissatisfier, but the two are clearly related in universities. Similarly, pay is a dissatisfier according to Herzberg, but it often refuses to be classified so unambiguously. Thus, it may function more as a satisfier in the traditional American university where salaries are privately negotiated, and more as a dissatisfier in the U.K., where two thirds of career grade staff in a survey by Startup (1979, p. 125) endorsed the "wage for age" principle. Because of its ambiguity, the Herzberg theory does not seem to be very useful in discussing staff motivation.

(f) Intrinsic and Extrinsic Motivation. A potentially more useful dichotomy is that of motivation which is intrinsic (self-generated) vs. that which is extrinsic (generated by external incentives--of course the effect of any given incentive will be variable depending on the individual's expectations). This classification can be related to staff motivation in a time of adversity as follows:

The recession may be considered to have its greatest effect on extrinsic motivation. Thus, staff find they are suffering from loss of affluence, particularly with respect to travel; their job security and advancement are under threat; research funds are less available; staff-student ratios are worsening; relaxation of student selection criteria may lead to an influx of students who are not such a joy to teach (Eble, 1972, p. 147); the level of facilities is worsening; and the standing of university teachers in the wider community is in decline.

Since most of these changes are inevitable, the possibilities for motivating staff extrinsically would seem to be diminishing (but see Section 3c below). Gumpert & Canavan-Gumpert (1978) have suggested that attempts to motivate staff should focus instead on intrinsic motivation, and they discuss the development of two intrinsic motives in relation to teaching: competence and caring. I will consider competence here. The conditions for its development are as follows: "A competence belief will be adopted by a person performing a task (whose parameters are defined by the performer) when (1) his performance on the task meets or exceeds standards of performance that he has accepted, provided (2) he has adopted a set to evaluate his competence; (3) he has reason to believe the task performance is reproducible and under his control; and (4) he believes the skills involved in the performance have not been part of his prior repertory of skills" (p.1564). The authors state their conviction that it is not possible to promote competence motivation through coercion, threat or force. Presumably it can be induced by a sympathetic and catalytic staff development consultant who is able to create a setting in which feelings of competence and incompetence can be explored in the absence of threat (and see also Section 4b below).

(g) Learning from How We Motivate our Students. Despite clear and obvious differences between staff and students in age, knowledge, skills, wisdom, dignity, etc., etc., I find it illuminating to search for similarities. A reading of Beard & Senior (1980, chapters 4, 6 and 7) suggests the following parallels to me:

(i) Double standards interfere with good performance. For students, double standards become manifest when objectives and assessment diverge. For staff, particularly in probationary grades, being appointed to teach but being assessed on the quality of one's research is a similar bind (Caplow & McGee, 1965, p. 10).

(ii) Despite its anxiety-producing effects, assessment per se is motivating for students, particularly formative assessment of course work. Lindop et al. (1982, p. 44) advocate the institution of annual staff development reviews in the U.K., and a move towards performance contracting (e.g. Bare, 1979, Elton, 1980) as a means of motivation and formative assessment seems to be under way.

(iii)Peer-and self-assessment may be expected to promote intrinsic motivation in students (see Reason & Adeline, 1982). In UCC some years ago a group of us arranged to visit each other's classrooms and give feedback on what we observed. All agreed it was a valuable experience. As to self-assessment, I find I learn a great deal from preparing my curriculum vitae! I have also found as a participant in staff development workshops that filling in feedback sheets often provides as many insights to me as it does to the organizers (see Section 4b below).

(iv) Appropriate feedback on performance is important in motivating students. Beard & Senior cite examples of written comments on essays (pp. 74-75) that can make a great deal of difference to the student's frame of mind--contrast "This just won't do" with "You have given some good answers but sometimes come up against obstacles, e.g. questions 2 and 10 (see comments on paper). You would do well to read text 12, page 17 and text 13, page 13". Many university systems may not provide for regular feedback to their staff. As for written comments, I have recently seen two reports of job interviews which contained remarks about internal candidates which were somewhat insensitive.

(v) Students like to be consulted about decisions which concern them. Richman & Farmer cite the (jaundiced?) view that "most people--especially faculty--most of the time tend to be less concerned with the content of decisions than with eliciting an acknowledgement of their [own] importance" (p.168). In similar vein, they suggest that "professors like to think that they run the place...one way of getting a noisy professor in harness is to give him some administrative responsibility..often [this] can calm even very agitated individuals" (p.145). The principle identified here--though treated in a backhand manner--is an important one. Consultation also implies that the superior is open to feedback. When this occurs the giver feels appreciated, and the receiver gains potentially useful information.

(vi) Sandwich courses (i.e. cooperative education) appear to enhance students' academic motivation and self-confidence; Lindop et al. (p.43) recommend six-to twelve-month secondments for academic staff to enliven teaching programmes and facilitate career mobility. Sabbatical schemes (p. 42) have a similar function.

(vii) Group work (Abercrombie, 1979, pp. 56-80) and group projects can provide valuable learning experiences for students, promoting cooperation and trust, and generating enthusiasm. Staff--particularly those in the same discipline--often hold back from full involvement with their colleagues, forming instead what John Heron (1973, pp. 10,12) has called "The League of Gentlemen". The League is characterized by jocularity, cynicism and avoidance of genuine self-disclosure. Involvement in a common group task can help to counter this pattern. I think back with great pleasure to my experience as a member of the voluntary and non-statutory Teaching Development Committee at UCC which over a period of fifteen months in 1975-76 elaborated a teaching development policy for the College. I recall as particularly fruitful those occasions when we met in each other's homes, having dedicated the night to uninterrupted and unhurried consideration of the current draft of the policy document. I learnt a great deal from this experience about how a committee can operate really well (it may or may not be relevant that we never had a formal chairperson or secretary!) Of course we had to sell our group project as well as carry it out. It received the equivalent of an "A" grade--it was adopted virtually intact by the College's decision-making bodies, and led to the appointment of a Director of Teaching Development (see also Section 4b below).

3. THE ROLE OF INSTITUTIONAL STRUCTURES IN MOTIVATION

Lindop et al. (p.30) suggest that money devoted solely to staff development is wasted in the absence of concurrent attention to the role of structures in staff motivation. I will consider just three: power, communication and reward structures.

(a) Power Structures. The results of the Astin & Scherrei study (see Section 2b above) indicate the kind of influence power structures may have on staff satisfaction. The authors also cite the finding of a 1967 task force on participation in academic governance that staff discontent is closely related to lack of influence in formal power structures (p.11).

I seem to recall a strong sense of grievance among tenured career grade staff at UCC because of their exclusion from membership of the Faculty Committees prior to 1977. The exclusion acted as a dissatisfier in Herzberg's sense--admission removed an irritation, but may not have improved motivation. I hope that the content of decisions as well as the lecturers' self-esteem has since improved! I also fear that in a time of adversity there will be less and less real consultation with Faculties on the part of the higher bodies.

The fact that the academic department is the functional unit in most universities means that the power structure in the department is also important for staff motivation. Could the presidential styles identified by Astin & Scherrei also apply to heads of department? If so, there are implications for staff satisfaction; and if Holmes (1979) is right in assuming that departments will become the focus of staff development in a time of adversity, the attitudes of heads will be crucial for the survival of such activity. In fact a survey by Halsey (1980, reported in Lindop et al., p. 25) revealed that two thirds of U.K. staff consider the administration of their department to be democratic. However, it is often department heads who are asked to take hard decisions about redundancies. It is doubtful whether departmental democracy can survive in such a climate.

(b) Communication Structures. Two points are worth noting here. First. Richman & Farmer (p. 172) note that ambiguity in organizational structure frequently leads to frustration or the part of staff. They cite one study in which staff felt they had greater influence with an authoritarian chancellor who set up clear lines of communication than with his more bureaucratic precedecessor. Second, Astin & Sherrei (p. 141) note that bureaucracy is usually associated in their study with large institutions; they speculate on whether this is inevitable. I will not be foolhardy enough to propose that the existence of bureaucracy is a good reason for shrinking the institution to a more manageable size!

(c) Reward Structures. "Given [the prestige associated with research], it is clear what...young professors should do. First, they should do research in their areas of professional competence. Second, they might write textbooks or other instructional materials that can be published and distributed extensively. And if they have any time or energy left, they can do anything else which appeals to them, such as teach, administer, or do public service. Given this strategy, it is clear why so many outsiders and students are disturbed by the modern university. The best ways for professors to optimize are contrary to what others want and expect from faculty". (Richman & Farmer, p. 264, and see also the quotation from Knapper et al. at the end of Section 2a above).

In fact, many staff are concerned about the emphasis on research. In Halsey's survey of U.K. staff (1980, cited in Lindop et al., p.27) about 70% of staff agreed that teaching carried too little weight in promotion decisions. This weight is also reflected in budgets. In a survey of U.S. staff 60% of respondents reported specific institutional support for research whereas only 10% reported the same for teaching (Eble, 1972, p.110). Few delegates to this conference will need convincing that more support for teaching is necessary, and one way to provide it is to influence the reward structure. This can be done by modifying the criteria for promotion/tenure or by setting aside funds for research and development in the area of teaching. Concerning criteria for promotion, provision for formal evidence on the quality of teaching has now been widespread in the U.S.for many years. Institutions in the U.K. and Ireland have tended in the past to be lukewarm in this regard, but that may be changing. U.C.C. has recently adopted a new promotions scheme as a result of trade union insistence that promotion criteria be made more explicit. The new scheme allows for promotion on the basis of teaching instead of (or as well as) research but fails to grasp the nettle of specifying what constitutes evidence of teaching ability. It is too early to say whether the scheme will influence teaching in a positive way but there is reason to believe that the promotion committee is at least taking the new criteria seriously.

Concerning financial provision for research and development, reports like that of Rose & Nyre (1975) suggest that special funds for innovation can influence motivation in a time of contraction.

It is also worth noting the motivating effects of the system in U.K. polytechnics whereby all courses are assessed by external validating bodies every five years. Lindop et al. (p. 15) note that this system has led to much innovation in the teaching area.

4. THE ROLE OF INDIVIDUAL FACTORS IN MOTIVATION

Clearly, institutional structures are not the only influence on staff motivation, since it is easy to discern differences in the motivation of individuals working in the same institution. Presumably different needs and experiences help to shape their different outlooks.

(a) Individual Differences Relating to Needs. Four aspects of individuality seem worthy of note:

(i) To pursue speculation concerning the needs for Power, Achievement and Affiliation (see Section 2b above) : It seems quite likely that the forces of recession will differentially favour staff with Power and Achievement needs over those with Affiliation needs. The result may be a less collegial campus.

(ii) Richman & Farmer (p.144) suggest a "rule of minimal competence" which is based on the idea that "a minimally competent person struggling with his job is much less likely to get into trouble [whatever that means!] than an over-qualified person, and he is also more likely to get more intensive job satisfaction". On this view, by arranging for staff to be placed in jobs they cannot quite handle, the administrator is meeting their needs while also being in a position to pay them less, a highly desirable strategy in a time of recession. Senior professors may not, however, feel that this principle should be applied to their own posts!

(iii)Richman & Farmer further suggest that staff with high prestige (as defined in section 2d above) can easily find posts elsewhere if their current needs are not being met. Those with lower prestige are likely to stay because they have to, and express their unmet needs in various activities which the authors clearly disapprove of : "union activities, petition signing, subtle or overt sabotage, and goldbricking" (p.145).

(iv) Finally, young, mid-career and older staff may have different needs for their professional growth (Eble, 1972, chapter 7). Young staff are just learning the job. Those in mid-career have a strong influence on the policies and practices of the institution, and their tendency to examine their careers to date may make them ideal leaders in institutional renewal programmes. Some older staff are past their best, or may be engaged in a slow process of withdrawal prior to retirement. But Eble (1980) has suggested that many of them have attained wisdom which might valuably be shared in dialogue with younger staff.

(b) Special Experiences, Woodbury (1979) presents a number of case studies of staff encountering new contexts which forced them to reappraise their competence as teachers (see Section 2d above), and as a result became intrinsically motivated to teach better. For example, an English teacher found his view of literature radically transformed by the experience of teaching poor blacks.

"None of the faculty members entered the programmes in question for the purpose of teacher improvement, and none took up their responsibilities because any reward seemed possible... What the programmes (and students) did was to provide a new context that required serious and concerned people to re-examine their ideas, their values, their assumptions, their teachings". (pp. 257,258).

I suppose most staff could relate similar growthful experiences of their own. I have already mentioned my participation in the UCC Teaching Development Committee. Working with the Committee taught me that it is possible to influence--indead to create--college policy from outside the formal committee structure. I had not believed that was possible. Heady learning indeed!

Two other special motivating experiences come to mind. One is a first year tutorial group two years ago. Analyse that group as I may, I cannot account for the sheer magic which we generated. All I know is that we regularly ran over time without anyone noticing. A single hour was never long enough.

The second experience was a residential course for staff last Easter (one of the fruits of the Teaching Development Committee's work), at which my feelings of competence in small group management received a massive boost. In my feedback to the Director at the end of the Course I wrote again of magic: "I actually have this picture of myself..carrying my magic everywhere I went this week, and using it to brighten each group I was in. It was magic, because it always worked".

Experiences like these are difficult to programme or predict, but when they do occur they contribute strongly to staff motivation--even in a time of adversity.

REFERENCES

ABERCROMBIE, M.L.J. (1979 Aims and Techniques of Group Teaching. Fourth Edition. Guildford: Society for Research into Higher Education.

ASTIN, A.W. & SCHERREI, R.A. (1980) Maximizing Leadership Effectiveness. San Francisco: Jossey-Bass.

BARE, A.C. (1979) Contracting effectively for individual growth. Proceedings of the Fifth International Conference on Improving University Teaching, London, 1514-1521.

BEARD, R.M. & SENIOR, I.J. (1980) Motivating Students. London: Routledge & Kegan Paul.

CAPLOW, T. & McGEE, R.J. (1965) The Academic Marketplace. New York: Doubleday Anchor Books (Originally published 1958).

EBLE, K.E. (1972) Professors as Teachers. San Francisco: Jossey-Bass.

EBLE, K.E. (1980) Teaching and aging. Proceedings of the Sixth International Conference on Improving University Teaching, Lausanne, 47-54.

ELTON, L. (1980) Assessing university teachers on their teaching. Paper to Academic Staff Association/Teaching Development Committee Joint Seminar on the Evaluation of University Teaching, University College, Cork.

GUMPERT, P. & CANAVAN-GUMPERT, D. (1978) Creating "intrinsic" motivation to improve teaching. Proceedings of the Fourth International Conference on Improving University Teaching, Aachen, 1562-1572.

HARTNETT, R.A. (1976) The effects of collective bargaining on academic authority in American higher education. In Flood Page, C. & Yates, M. (eds.) Power and Authority in Higher Education. Guildford, Surrey: Society for Research into Higher Education.

HERON, J. (1973) Experiential Training Techniques. University of Surrey, Guildford: Human Potential Research Project (mimeo).

HERZBERG, F. (1968) Work and the Nature of Man. London. Staples Press.

HOLMES, D.R. (1979) Toward a theory of change for the 1980's: faculty-initiated reform and the fostering of developmental scenarios. Proceedings of the Fifth International Conference on Improving University Teaching, London, 1953-1961.

KNAPPER, C.K., GEIS, G.L., PASCAL, C.E. & SHORE, B.M. (eds., 1977) If Teaching is Important . . . Clarke, Irwin, in association with the Canadian Association of University Teachers.

LEE, C.B.T. (ed., 1967) Improving College Teaching. Washington, D.C.: American Council on Education.

LINDOP, N., MERRITT, N., GOWENLOCK, B., & WARREN PIPER, D. (1982) Teachers and staffing. In Bligh, D. (ed.) Accountability or Freedom for Teachers? S.R.H.E. Leverhulme Programme of Study into the Future of Higher Education-7, 11-54. Guildford: Society for Research into Higher Education.

MASLOW, A.H. (1970) Motivation and Personality, Second Edition. New York: Harper & Row.

MCGREGOR, D. (1960) The Human Side of Enterprise. New York: McGraw-Hill.

REASON, P. & ADELINE, E. (1982) A co-operative selection process for a peer learning community. Self and Society, 10(3), 105-112, 1[illegible]-143.

RICHMAN, B.M. & FARMER, R.N. (1974) Leadership, Goals, and Power in Higher Education. San Francisco: Jossey-Bass.

ROSE, C. & NYRE, G.F. (1975) From retrenchment to renewal: faculty development and innovation in the California State University and colleges. Proceedings of the First International Conference on Improving University Teaching, Heidelberg, 117-125.

STARTUP, R. (1979) The University Teacher and His World. Farnborough, Hampshire: Saxon House.

WILLIAMS, J.C. (1978) Human Behaviour in Organizations. Cincinnati: South-Western Publishing Company.

WOODBURY, R.L. (1979) Organizational change and the improvement of university teaching. Studies in Higher Education 4(2) 255-259.

THE DEFINITION AND USE OF VIDEO IN HIGHER EDUCATION

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We are presenting the results of an international, interdisciplinary project to be published by Kogan Page, London, later this year. We have examined the use of video in higher education to improve learning, teaching, interaction, personal behaviour and communication. Altogether there are 24 chapters written by 32 authors. The contributors are researchers, teachers, educational technologists, staff developers, consultants, student counsellors and psychologists from many parts of the world: Australia, Canada, England, Germany, Israel, New Zealand, Scotland and the United States of America. Some contributors are theorists while others are practitioners; all are concerned with exploring the potential of video technology. The contributions are, in essence, theoretical statements deduced from experiments or case studies, or they present applications of theories to educational practice. The authors are mainly concerned with pedagogical and psychological aspects of video technology rather than its technical features. Video techology is defined as the storage of educational material on videotape (on open-reel or cassette, as magnatic impressions) or on videodisc (as optical impressions).

Advantages of using video in higher education include its manipulative power, that is,a video program can be stopped, wound forward or backward at any time and thus be used more effectively by the individual learner at his/her own pace, and by groups of students for in-depth discussions and analyses.

The same advantage can also be acquired by television -,whether as broadcast television (by electro-magnetic waves) or as close-circuit television (CCTV by cable) - if it is video recorded onto videotape. Likewise, film can be telecined onto videotape. But the advantage of video over TV and film is that it is cheaper and more easily accessible. Another advantage of video is its immediacy, that is, a recording on videotape can be viewed immediately after the recording is completed or even while it is in progress.

The main disadvantage of videotape is its low resolution factor. However, in most educational situations, advantages outweigh the disadvantages.

The use of video in higher education is considered in a variety of learning-teaching situations, in a wide variety of subjects, on and off campus, for individualised learning as well as in small and large group teaching.

Whilst each chapter is complete within itself and need not be read in sequence, the book nevertheless has been structured and designed to present a cohesive whole comprising all chapters as elements in the arguments for the uses of video in higher education. The attached list of contents of the book gives an indication of the issues raised, and the attached list of contributors and their backgrounds may imply the direction which they have taken to address the issues.

The first chapter provides us with a state-of-the art view of Video Technology in Higher Education, if such is possible in this rapidly developing field; hence the question mark at the end of the title.

The following chapter develops cognitive based design guidelines as a theoretical basis and framework for using video and computer technology in higher education.

The next three chapters provide the reader with an overview of interactive video, video production technology, and the power struggle over video productions (and over the control of knowledge) between academics on the one hand and technical producers on the other.

The following six chapters deal with various aspects of 'Video Self-Confrontation': as a stimulus for IPR - interpersonal recall -; in staff development; teacher training; 'Symmetrical Communication'; modelling on the behaviours of task group members; and in research on the processes of thinking during teaching and learning tasks. The last example of video self-confrontation in research also acts as a bridge to the next two chapters which discuss video as a research tool: in presenting stimuli, collecting responses, providing data; and in project orientation for developing critical attitudes towards the media, and towards personal as well as public communication.

The subsequent five chapters focus on various ways of students' 'learning to learn': video programs on student study methods; trigger films as a stimulus for affective learning; tutored videotape instruction; and auto-tutorial or individualised learning with videotapes.

The last five chapters discuss the use of video applications in specific areas: in distance education (at the Open University, U.K.; the Fernuniversität, West Germany; and at the University of Queensland, Australia); in foreign language teaching; and as resources in the Library.

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DEVELOPMENT OF VIDEOS AIMED AT IMPROVING STUDENTS' STUDY SKILLS

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The demand for study skills programmes at the University of Auckland became apparent in 1977 when hundreds of students turned up at voluntary lunch-time sessions which were advertised for the first time. It was impossible to cope adequately with the demand by using the small-group framework which had been envisaged, so alternatives were explored. As a result we became aware of Alex Main's Strathclyde Study Skills Series of five films, and decided to screen these films for students during the early part of the following academic year. It was hoped that these films, together with some printed materials which are regularly made available for students (Jones & Winterbourn, 1981) might satisfy some of the demand.

In 1978, over a two week period, there were about two thousand voluntary attendances by students who wanted to view the films. It was very obvious that a substantial demand existed, and informal feedback indicated that some of the students at least had found the films useful.

During the following year showings of the videos were repeated, and this time a more systematic survey of students' reactions to the films was carried out. On the whole students thought that some useful advice was contained in the videos; but there were some criticisms, the chief of which were as follows.

1. The films seem "foreign".

The video series was produced specifically for the University of Strathclyde. While the University of Auckland is a very similar institution there are points of difference which emerge from the films and occasionally jar on a New Zealand audience. In particular, students referred to the "funny accents" of those who appeared in the videos! While the advice which is offered is probably as appropriate in Auckland as it is in Glasgow, the former audience is likely to consider it less appropriate because of its "foreign" context.

2. The advice comes from an authority

Students often considered that the films were too didactic and that the advice emanated too much from an authority figure who seemed a little removed from the "real world" of student problems. Sometimes it seemed to be a counsel of perfection which was being offered.

3. The presentations sometimes seemed slow and monotonous

The source of this problem probably lay in the fact that the Strathclyde films had not been produced for the context in which they were being used. At Auckland they were offered as "cinema" presentations in a large lecture hall, while at Strathclyde they had been used, typically, with quite small groups of students. The approach of having a single figure talking closely to the audience for most of the video did not transfer entirely successfully to a large audience setting.

The nett result of the evaluation indicated that students found the videos very useful, but that an "Auckland" version would be more appropriate, with modifications along the lines suggested above.

PRODUCING THE VIDEO SERIES

The main constraint was the fact that there was very little by way of a budget for producing the films. However, the University of Auckland does have a three colour-camera studio facility together with good editing facilities, and the services of an experienced T.V. producer and technical assistant (albeit in competition with the rest of the television requirements of a university of twelve thousand students). We were also able to obtain the help of a full-time assistant who was able to act as a liaison person and take care of logistical arrangements. It was decided to begin the series with a film about students' perceptions of their first year at university, and strategies for coping. Following this introductory film would be a series of four films dealing with more specific aspects of study methods.

As we wanted a non-didactic presentation we were anxious to have the messages which we wished to communicate come from students. Early attempts at careful structuring and scripting of the programmes were not at all successful: presentations from students seemed forced and not credible. Eventually we adopted the strategy of doing no planning regarding script or structure, and simply letting this emerge from the film production process. The only framework used was that the film was to be representative of the perceptions and experiences of five typical students. The five stages involved in the film production were as follows.

Stage 1.

The initial phase consisted of going out and talking with students, around campus, to sort out likely candidates to appear in the film. The main criterion for inclusion in the film was that a student should be "typically representative" in terms of degree enrolled for, problems normally encountered, etc. Usually, more than one conversation with students took place, and notes were made to keep track of subjects' perceptions of the various aspects of university. After these initial conversations, possible subjects were interviewed informally in front of a video-camera to assess how well they "came-over" on tape. After this, the five subjects who were to form the basis of the film were chosen.

Stage 2.

Armed with the knowledge of what students had said previously, an extended interview was carried out with each student on-camera, in various locations. Questions were simply appropriate prompts to get students to talk about the issues which they had previously raised. So far as possible we did not confine students, but simply initiated discussion regarding the ways in which they were coping with the demands of university.

Stage 3.

The five interviews formed the basis for the whole film, and in practical terms represented the pool of possible material from which a script had to be constructed. There were common themes running through what students had said in their interviews, and these broad areas were used to construct an outline for the script. Some of the topics covered by students - and an example of an associated point which we wanted to emerge in the final film - were as follows.

Workload at university - Workload seems heavier at university than at school; but some students, far more than others, manage to fit in extra-curricular activities and still cope adequately.

Differences between school and university climates - School is much more personal than university; you have to make a definite effort at university to become involved and find the personal element.

etc.

By the end of Stage 3. a rough idea of a script and an associated structure for the film had emerged.

Stage 4.

This was entirely a matter of deciding which statements from the interviews best illustrated the points arising out of the general script from Stage 3. The "script" was then constructed by editing together the relevant sections of the interviews. The end result was a series of interview fragments, arranged thematically. For example, the film begins with a brief statement from each of the students on why they came to university - and it ends with the advice which they thought most valuable for intending students.

Stage 5.

Visual interest was added by shooting and editing in appropriate material, so that essentially the students' interview remarks became voice-over commentary. Some examples of this are as follows.

(a) One of our subjects described how there had been very close relationships between staff and students, in small classes, at school and contrasted this with the impersonality of the mass lecture at university. For these visual shots we took the student back to his school and pictured him in a typical small class, then followed with a shot of a large lecture theatre.

(b) One student was a karate exponent: we showed her in a practice session as she mentioned this fact in her description of social activities.

This phase was "staged", in that it followed on from what students had said, and to an extent is contrived. However, students were not required to act out situations in which they were not normally involved, and simply had to "be themselves".

To finish the film, music was added over opening and closing title and credit sequences. The final product, which runs for 18 minutes, was entitled "Varsity: The Good Life?".

In principle, this first film was relatively simple to produce; whatever students describe is a true record of the state of affairs for them, and is (at the very least) a case-study for other students to consider. The Study Methods films which followed the introductory video-production described above were more problematic. There were some broad principles which we wanted to suggest for students' consideration without being too didactic, for different students manage to cope effectively with their studies in rather different ways. It was necessary to make some modifications to the procedures used for the first film, although a similar framework was used.

As before, the first stage involved locating "typical" students; but this time the students were required to typify the specific study behaviours which we wanted to portray (either "effective" or "ineffective"). The process of locating these "typical" students involved fairly lengthy informal interviews, and these formed the basis of a later semi-structured interview "on camera". Usually three student interviews were selectively edited together to produce the "script" which was required and, where appropriate, visual material was dubbed over the top of the interview collage for interest and clarity. In this case though, the edited interview segments were not able to stand on their own and communicate clearly the message that was intended. It was necessary to draw together the main points that the students had been making, via a structured summary/resume, presented over the top of suitable visual material. The final products are a compromise between didactic, authoritative statements and peer suggestion. Four films were produced dealing with the topics of Personal Time-tabling, Note-taking, Reading and Essay Writing.

USING THE VIDEO FILMS

The films are currently being used in two quite different ways: as self-contained presentations and as a resource for use in Workshop programmes.

Self-contained presentations

This is the context for which the films were primarily produced. Students simply turn up and watch the films, as if at a cinema. They come to the presentations "cold", with little or nothing by way of preparation. Most come in hope of being offered hard, authoritative advice - and yet at the same time they would like to feel that they can empathise with the presentation, and that it applies to their own particular situation. The strategy of having an authoritative voice summarise and structure what student peers have said seem to have been fairly successful. Although no formal evaluation has been implemented, informal feedback is encouraging and suggests that the series is successful as free-standing films. There is some danger that the films may be looked upon as mere entertainment - they are visually attractive, fast-moving and certainly project the same professional aura as commercial entertainment programmes. However, this does not seem to be a large problem, and the growing number of university departments (as well as large numbers of other secondary and tertiary institutions) who are using the films is encouraging.

While they have been very successful in this one context though, they are no more successful than the Strathclyde series (possibly less successful) in a different context, to which we now turn.

Workshops aimed at improving Study Methods

Films about study methods cannot, on their own, be the most effective vehicle for bring about improvements in students' study methods. They can serve as a stimulus to get students thinking about their study patterns; but workshops where students can interact in small groups represent a much more logical - and effective - approach to the improvement of study methods. The procedure which has been adopted at Auckland is a modification of Gibbs' (1977) pyramid approach. This operates through four stages, as follows.

1. Students carry out an appropriate exercise, individually, for a few minutes. For example, in a session devoted to essay-writing students start off by marking an essay.

2. Individuals then discuss their efforts, in pairs, for a few minutes. In the case of the essay-writing Workshop, students would swap essays, look at the comments of each other, and discuss how the final grade was arrived at.

3. Pairs then combine to form a group, of four or six, and spend about

half an hour in generating "good advice" to other students; one person is appointed as a recorder in each group.

4. Finally, each group volunteers the advice it has generated in a plenary discussion which last for up to about half an hour.

Gibbs' procedure stops at the end of this plenary session, and the whole structure is totally non-directive. It has the advantage that each participant is "forced" into being an active discussant, and is projected into a situation where a very serious critical examination of personal study methods takes place in a non-threatening environment. Also, a great deal of informal peer learning occurs. There is often the feeling though that the whole thing is left dangling and in need of rounding off. To get over this problem video-films are used as authoritative statements at a final stage. There are a number of advantages in showing the film at the end of the session rather than at the start. Most importantly, much of the advice offered in the video-presentation will be identical with that which has been generated during the group and plenary discussion. In this case students have their personal interpretations re-inforced by an authoritative confirmation. When advice conflicts with what students have decided for themselves, then the individual is "strong" enough to reject it - or modify it - with the benefit of the previous peer-group support.

There is a fairly strong indication that the format of the Strathclyde Series of films (as opposed to the Auckland format described earlier) may be the more suitable as a final stage of the Workshop format. This may be because they are more authoritative in approach, or possibly because many of the participants in these particular Workshops are mature students, and identify more readily with a staff member than they do with young students. Whatever the reason, the objections to didactic presentations from authority figures which were outlined earlier do not necessarily seem to hold when the video-films are only one element of the total programme outlined earlier.

REFERENCES

Gibbs, Graham. 1977. A Guide to Running Group Sessions. I.E.T., The Open University, Milton Keynes.

Jones, John and Winterbourn, Ralph. 1981. Suggestions on Studying and Sitting Examinations. University of Auckland. Auckland, N.Z.

USE OF VIDEOTAPE IN THE IMPROVEMENT OF STUDENT STUDY METHODS

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Summary

This paper outlines the deficiencies in various methods of improving learning skills in tertiary education, and describes how video material can augment the work of teachers and counsellors. It shows how video can be used for self-study, group-work and learning feedback. The rationale, content and general approach of the series Study Patterns are described, as are the modifications which have been designed as a result of feedback from students, teachers and counsellors. Effects of study-skills video material on attitudes of teachers is described.

In tertiary education there are three common methods of helping students to improve their study skills. These are: textbooks, courses on learning skills, and personal counselling. Each has disadvantages of some sort.

Textbooks In 1979 there were nearly 400 books in print in the English language called something like "How to Study", "Study to Succeed", "Pass Your Exams" etc. Many students buy such books - but few read them. Often they sit on a student's bookshelves as a talisman for success or a charm against failure.

There are several reasons why this should be so. Many texts on study methods are aimed at producing the "perfect" student. The methods described, the routines outlined and the dedication required are often too much for the student whose motivation is average or who is no more disorganised than his or her contemporaries. Sometimes, too, study texts are too dogmatic and didactic, and do not seem to offer the student reader an opportunity to experiment with methods. Then again, the student who is uncertain about his or her study skills (including those of reading and note-taking) may find it too much of a challenge to open a book which requires quite high levels of reading and comprehension skills to master.

Courses The impersonality of the textbook is often overcome by offering students a course on learning methods, in which instruction can be blended with discussion and the practice of specific skills. The major drawback of this approach is a logistical one: the timing of the course. Most institutions cannot offer courses on demand, and so need to offer them at fixed points in the year. If a study skills course is offered to new first year students at the beginning of a semester, it is often seen as unnecessary or irrelevant. Students who have just succeeded in entering tertiary education will be suspicious of a course which appears to be for those who are not successful. Until new students have experienced some of the challenges of their studies, they will not identify which skills they need to improve; until they have had some feedback on progress, they may have little motivation to seek improvement.

If the course is offered later in the semester, it may equally fail to cater for the differential development of the students. It is difficult to organise and time a learning skills course so that it meets the needs of different students at the optimum time for each student. In addition, study skills courses tend to suffer from their "remedial" image: students often stay away from them because they believe them to be for "failures". The average student who may want some general improvement in methods and techniques may avoid what seems to be something provided for the below average student.

Counselling Personal advice from a tutor or counsellor can overcome the difficulties of timing mentioned above: an individual teacher or adviser can spot the optimum time to assist a student with a specific skill, and can tailor the advice to suit the student's personal style or approach. Individual help is also often more anonymous, and students can feel more confident in approaching an individual for private assistance than attending a public course.

The problem in tertiary education in most countries at the moment is that lecturers and tutors often have heavy teaching-loads and can offer students less individual attention than they wish. Central agencies such as Counselling Services and Advisory Centres are often also overloaded or under-staffed, and can cope only with students who are under severe pressure. They may have little time for helping the average student who simply wants to "check out" different study methods.

In the mid-1970's at the University of Strathclyde we set about looking for a way of augmenting the three methods of assistance described above. Our aims were to

a) overcome the impersonality of the study textbook

b) provide students with assistance at a time when they recognised the need for help, and as immediately as they required it

c) give students some of the directness and individual attention that is characteristic of personal counselling

d) avoid increasing the staff of any central service.

The search was motivated by increasing demands from students for advice on study and learning methods and increased referral to the central learning service by tutors, at a time when university resources could not encompass extra staff. The result of the search was a very modest investment in the preparation of videotaped materials for individual student use.

Study Patterns

It was decided to offer students access to a series of short 15-minute video presentations on the topics which were raised most often by those who called for personal counselling on academic matters at the University's Centre for Educational Practice. On analysis there seemed to be three general reasons for students to seek advice:

1. Difficulty in planning or organising work: timetabling, making effective use of time, concentrating on study, reading effectively.

2. Ineffective cognitive structuring of subject-matter, as evidenced by problems in note-taking, essay-writing, exam preparation and revision.

3. Some personal worry about a cognitive skill, such as speed of reading or efficiency of memory.

(For further details of this analysis, see Main, 1980).

The topics chosen for the videotape series were therefore:

- Personal Timetabling
- Using Your Time
- Reading
- Note-taking
- Essay-writing.

The approach adopted in writing and presenting the material was straightforward: it was to present simply and crisply, without undue elaboration or too much detail, some widely accepted "good practices" in studying. The tapes were designed to act as a basis for students to explore their own study habits and the skills required by their courses; at no time were they meant to be definitive accounts of best methods of study. They were unambiguously aimed at first year students in all faculties of Strathclyde University, and the examples, references and presentation format were selected for that audience.

It was decided to use one presenter, talking for the most part directly to camera, to involve the viewer in an intimate relationship with the presenter. The term viewer (in the singular) is used to indicate that the original concept was of the tape being watched in privacy in a viewing-cubicle by one person. The tapes were made available on video-cassette on open-access in a specially constructed resource centre: students could view the material without booking it out or informing anyone of their presence. In this way, the three great advantages of videotaped material were harnessed to the improvement of study skills - immediacy, privacy, relevance.

Immediacy Students searching for immediate advice, or seeking some method of judging their own study methods, had available to them a short 15-minute exposition/illustration. They had no need to search through textbooks for material. For those students who were daunted by the "open-ended" task of reading, the fact that video-cassettes had a fixed time marked on them seemed highly-motivating.

Privacy No student need attend a public course on study methods, nor acknowledge to any other person, staff or student, that he or she was seeking advice. The private viewing-carrell seemed to attract many who otherwise would have avoided contact with the Centre.

Relevance Students could view only those tapes which related to their individual needs - and (very importantly) at the very time those needs were identified. Instead of reading one textbook or attending a global course on study methods, students could select the tapes in any order, space their viewing out as required, and re-view any tape any number of times.

General monitoring of the use of the tapes over a four-year period indicated that these three characteristics of the system of viewing were widely appreciated. Systematic research has not been carried out on usage, but a conservative estimate is that 20% of all first year students use the material each year, and about 10% of students in subsequent years. Some of the tapes, notably Personal Timetabling and Using Your Time are in demand by postgraduates. (Further details of the use of these tapes and other audio-visual aids to study are available in Main, op. cit.).

General Uses of the Series

The primary use of "Study Patterns" has remained as outlined above - for the average or above-average student to check-out study methods, to come to terms with his or her individual needs and approaches, and to direct "fine-tuning" where required. We know that the vast majority of users gain some immediate benefit from their viewing: either they find something directly applicable, or leave feeling satisfied that they have little need to alter their learning styles or strategies. However, the series has also been used in a wide variety of other ways at Strathclyde and in institutions in many other parts of the world.

a) As a screening and preparation for counselling. A student who has a general, ill-defined worry about learning methods can be directed to one or more of the programmes. Viewing can sharpen up the student's self-awareness, and can help him or her to discuss in more effective terms with a tutor, adviser or counsellor.

b) Augmentation for courses. Where study skills courses are held, individual viewing of the elements of the series can be used for preparation or revision.

c) In group work. Where a number of students are on a common course, the series can be viewed preparatory to tutorial discussion. The general concepts presented on the tapes can be related by the group to the specific assignments, projects, seminars or lectures of their course.

d) Distance learning. The material can form part of the general package of advice and guidance for students who do not have immediate and regular contact with tutors or advisers.

e) To assist learning feedback. Individuals or groups can review the tapes at the end of a semester as a focus for discussion of the organisation of the semester's work and of planning for subsequent semesters.

f) Transition to tertiary education. Secondary school students who intend to enter university or college can use the programmes as a means of preparing for higher level study.

Modifications

John Jones (1983) suggests modifications which improve the content of the series and make it much less didactic in approach. These are very much in keeping with the spirit of the original venture, and fit in with the feedback obtained in many British institutions.

Other modifications now under way include:-

- the re-recording of the series in colour and with a wider variety of illustrations, graphics, animation techniques, in order to meet the increasingly more sophisticated demands of the viewing audience
- the re-organisation of the material into small 5-minute modules, each module with its own follow-up exercises
- the re-vitalisation of the material by inclusion of more interactive tasks for the viewer
- the extension of the content to include modules on exam preparation, revision, mathematical skills, laboratory study, physical fitness, relaxation and sleep, and library skills
- the inclusion of optional modules for secondary school students
- the inclusion of some modules for group viewing.

Postscript/

Postscript

One advantage of the series has been the effect it has had on teaching staff who have used it in discussion with their own students, or who have seen it as part of a workshop course on learning skills. It has encouraged many lecturers at the University of Strathclyde and elsewhere to become more explicit about the tasks they set their students, and more direct about the learning aims of their courses. Particularly where the series has been used as an aid to the tutorial programme of first year classes, it has encouraged staff and students to explore more fully together the skills of both teacher and taught. In this sense the series, designed primarily for individual study guidance, has taken on a staff development function in a number of institutions.

References

JONES, John Varsity: The Good Life? Reflections on the Design, Production and Use of a Video Series on Student Study Skills.
IN ZUBER-SKERRITT, O. (ed)
Video in Higher Education. London: Kogan Page Limited, 1983.

MAIN, Alex *Encouraging Effective Learning*. Edinburgh: Scottish Academic Press, 1980.

VIDEO PROJECTS BETWEEN MASS MEDIA AND UNIVERSITY CURRICULUM

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INTRODUCTION

Mass media play an important role in our society: they are influential as means of socialisation, information, education and entertainment. Today, many mass media users frequently tend to experience reality largely via these means rather than through direct exposure to reality, through action or response within reality. Viewers may respond to TV images - e.g. in TV games simulating reality - as if they were reality: or they may interpret recordings of reality as if they were fiction. Research has shown that their ability to master reality seems, therefore, to decline. For the last decades, many authors have anticipated these developments of mass media use in our society (Anders 1956). They have suggested to restructure the system of mass media in our society: they, furthermore, have promoted educational concepts to enable media users to develop critical attitudes towards the media and to act differently in terms of both personal communication and public communication.

MASS MEDIA AND SOCIETY

If consumers need to develop a new relation to mass media in order to avoid the dangers of merely consuming media products, an answer could be seen in that radio and TV develop from one-way communication to means of two-way communication. At present, only the producer controlling the medium is entitled to speak, not the listener in his passive role. However, radio and TV could be a fantastic means of communicating if they could also be used to make the listener speak, to draw him into communication. Producer and listener may then appear fundamentally equal. It would mean to shift power of control over the media, into the listeners' hands as technological progress would enable us to do. Democracy and democratic use of the media may, thus, be inseparable (Brecht 1927 - 1932).

Radio and TV are always linked to political beliefs and values: their products can largely be understood as being either for or against democratisation. But the media ought to be on the side of the progress of society towards more democracy. Reality should be its content, and its target for impact and interference. The central issue should be man: his/her experiences and emotions, including those engendered in working life. The listener in his/her role as the producer, should take part in a collective movement in which virtually everybody is entitled to make art through the media, thus getting actively involved into the struggle for more democracy. (Tretjakov 1923 - 1934)

If mass media were developing in this way in our society, it would imply to organise collectively real needs and experiances of everybody, setting out from the experiences of daily life and integrating working life into the larger context of society. This public represented through radio and TV symbolises at any time the then state of democratisation rather than any stable or final state of democracy. At present, video action groups, Free Radio groups, students etc. are advancing this notion in society. This movement has been described by the term 'counter' public in order to differentiate this state of development from the 'middle-class' public currently prevalent in our society.(Negt, Kluge 1972)

From analysing the 'middle-class' public and its media products, it becomes obvious that the media exert a fascination over the consumers: they appeal to genuine needs and expectations of the consumers without fulfilling them - the consumers experience manipulation. The main question is, therefore, how to enable the consumers to participate in controlling manipulation through media. One way is to enable the consumers to produce their own programs: thus, the consumers take over the function of those manipulating. Technological progress has made it technically possible for everybody to be a media producer. The means of media production are already virtually democratised. However, only a genuinely free and democratic society could make full use of these means and possibilities. The democratic use of the mass media and the question of power and control in society are, thus, inseparable. (Enzensberger 1970)

VIDEO PROJECTS AT THE HDZ AACHEN

The claims of the authors presented so far, have had influence on the development of the use of mass media and video in W-Germany. As an example, we describe the approach of the HDZ Aachen to put these theories into practice through video projects. The HDZ Aachen is a department of the Technical University of Aachen: it has also the function of a centre for AV media of this university. Since 1974/75, it has been running video projects for the following groups of participants:

- students at the Technical University of Aachen
- school students in the 10 - 19 age group and their teachers, in institutions of secondary education in and around Aachen.

By now, the total number of projects finished within the undergraducate curriculum of our university is around 80, each of them involving 3 to 10 students for 1 to 3 semesters. Another 50 projects involving teachers and their students in secondary schools, have been rendered possible by the HDZ. These projects are facilitated by the HDZ's 20 portable video cameras and recorders; furthermore, the HDZ has set up a video studio which can be used by any participant after a short training period. Hence, students from our university or from school can produce their programs completely on their own: from the first vague idea through script and stage play to the final product, with electronic editing and sound dubbing. The length of the recordings ranges from 15 to 50 mins with the average around 30 mins. Thus, students develop and train all skills generally needed to produce 'proper' programs. Within the projects, these activities are supported by lectures and seminars on the mass media and their role in society, and related topics.

In this section, we describe a series of projects run by interdisciplinary teams of undergraduates of social science, humanities, education, architecture and engineering, from our university. The projects illustrate the different aspects of media theory presented above, as to how they have been taken up within the projects. The main emphasis of this series of projects is on assisting groups in society to communicate their collective experiences to other groups.

The students' aim is to support groups of lesser weight in society (in Aachen) so that they can articulate their experiences in a way which is comprehensible and acceptable to others. With Negt and Kluge, the students try to set up a 'counter' public: as a group within society which has available both the means and the awareness to organise and communicate collective experiences. The video recorder serves as a means of focusing the process of observation. The observer quickly becomes a part of the life which he intends to record. The interaction between the 'observer' and the 'object of observation' is deliberate. Here, video serves additionally as a research tool to analyse this particular interference.

This series of projects deals with groups such as migrant workers in Germany, unemployed youth, retarded or maladjusted children, drug addicts, members of the peace movement and related groups, students from non-European countries, young teachers in problem schools, people living in housing areas threatend by demolition and ruthless development, and also women in various roles and settings. We illustrate this range of activities by means of a project dealing with youth in Aachen who consider and call themselves 'punks'. It became publicly apparent through the recording, that they are mostly sons and daughters of middle-class Aachen families with appropriate schooling collectively awaiting their fate of long-term unemployment. The scornful rejection of them by local citizens had even led to police action against the punk groups: the recording, however, revealed that the police tried not to employ those tough measures expected by the local newspapers. The recording has been frequently shown in small theatres in Aachen - perhaps a contribution to making a wider public aware of collective experiences of a sub-group of society.

THE EDUCATIONAL CONCEPT OF THE PROJECTS

It has been important for us to design a coherent educational framework to structure the variety of these video projects. In this section, we present an outline of the framework based on several investigations by the HDZ's research staff. According to these investigations, each of the video projects goes through certain developmental stages at three different levels:

- the level of personal communication
- the level of concern with mass media
- the level of transfer into reality.

These three levels characterise the leading educational concept of our video projects. They are briefly discussed here.

The first level is concerned with personal communication of the project participants among themselves. Reflection of communication in society starts with analysing communication processes which involve ourselves as individuals: observing interactions within the group, video self-confrontation and role play, developing further the participants' communication skills.

The second level is defined by questions relating to the mass media such as: What are the aims, means and impact of public and commercial TV? The main emphasis is on the theoretical analysis of the system of mass media in society: from there, the project groups move on to re-production, and re-creation of such products - or to creating their own products - to be made public and discussed according to criteria which the group may consider applicable to analysing professional TV productions. Thus, they learn to assess the impact of mass media on society by observing the impact of their own products on their audience and comparing it with findings of theoretical investigations. They may even sense the power which is familiar to media producers being in control of the means to manipulate others (which may include experiences of frustration and defeat).

The third level is determined by aspects of transferring experiences into practice. The participants launch or join projects using video in schools, urban planning and community actions, controversies of local or regional politics, thus anticipating or testing possibilities and impact of media in reality. The may become actively involved in struggles for democratisation, translating claims of political theory into political practice.

The projects usually combine all three levels within the framework of project orientation. The educational model which yields the basis for this approach follows Kolb, Rubin and McIntyre (1974): the students go through the processes of experience-based learning at each of the three levels in turn:

- at the first level, from individual experience of video self-confrontation, to reflection on and insight into, their own self within the group's communication structure
- at the second level, from analysis and reflection of personal experiences - and the experiences of others - with mass media, to testing their individual hypothesis by producing, showing and discussing their own video programs in public
- at the third level, from confrontation with reality to developing and testing new projects or personal models to master reality.

In our view, the most important characteristic of experience-based learning through projects is the degree of learner control over the learning experience. This dimension reflects notions of education suggested by authors such as

Rogers, Fromm and many others who have a strong influence on students joining our projects. This dimension is also related to the second level of our concept: how society is controlled through mass media. By means of these projects, students learn to take over control of their own learning against the opposition of the teaching system of the university - as a model of how individuals or groups can gain control over their lives against power exerted, for instance, by mass media.

Within the educational framework outlined here, the video projects integrate cognitive aspects of learning about media and affective elements of motivation through video enthusiasm; they combine creativity in producing video programs with developing technical skills; they lead to action outside the projects - or outside the learning environment - in personal life as well as in society at large. These aspects are discussed in detail and evaluated with regard to their implementation, in a series of research reports published by the HDZ Aachen.

THE PROJECTS WITHIN THE UNIVERSITY

The students working with video consider their activity a part of their curriculum. Their commitment may lead to a master's thesis or it may be rewarded credit - based on course work or an essay - equivalent to a course option in education, sociology, humanities or even engineering. Within a comparatively conventional undergraduate curriculum, the scope for self-determined learning is, thus, considerably enlarged. Our evaluation studies have shown that the students' attitudes are influenced through their encounter with reality outside the academic community as well as through involvement with problems of others who may belong to different social or political groups. Their creativity and imagination is challenged by the production process beyond what normally takes place in undergraduate education. They learn to learn at their own pace; and they apparently reach a higher level of self-responsibility and independence than their peers in conventional courses.

In Germany as in any other country, criticisms are levelled at project orientation. Too many negative experiences allow the universities to reject this notion fairly undisguisedly. However, more than 30 master degrees in education, humanities, social sciences or engineering have been awarded on the basis of the video projects described here: this encourages us to continue with our concept despite all difficulties and obstacles.

REFERENCES

Anders, G., '*Die Antiquiertheit des Menschen*' (The Obsoleteness of Man). Beck, München, 1980

Brecht, B., 'Radiotheorie (Theory of Radio)', *in* B. Brecht *Gesammelte Werke* VOL. 18. Suhrkamp, Frankfurt a.M., 1968

Enzensberger, H.M., 'Baukasten zu einer Theorie der Medien (Approaches to a Theory of Media)'. *Kursbuch* 20, 1970, p. 159 - 186

Kolb, D.A., Rubin, I.M., McIntyre, J.M., *Organizational Psychology. An Experiential Approach.* Prentice Hall, London, 1974

Negt, O., Kluge, A., *Oeffentlichkeit und Erfahrung* (Life Experience and the Public). Suhrkamp, Frankfurt a.M., 1974

Tretjakov, S., *Die Arbeit des Schriftstellers. Aufsätze, Reportagen, Portraits* (The Work of the Writer. Essays, Reports, Portraits). Rowohlt, Reinbek, 1972

	Awareness of problem	Concrete Experience	Reflection and Generalisation
Level of Personal Communication	What are my personal difficulties in communicating with others?	Role play and video self-confrontation	Impact of video on group processes
Level of Concern in Mass Media	What are the characteristics of public TV?	Production of video programs	Impact of video programs on audience
Level of Transfer into Reality	How can video contribute to advancing society?	Video projects in schools, social work, communal politics etc.	Impact of video projects in different settings

Table: The three levels of video projects

VIDEO AS AN RESEARCH TOOL

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I. INTRODUCTION: STATEMENT OF PURPOSE

The purpose of this paper is to identify the range of uses and possibilities video technology presents as a research tool --in presenting stimuli, collecting responses, and presenting data. Illustrations of innovative uses of video in research are included.

II. VIDEO RECORDINGS IN STIMULUS PRESENTATION

Two kinds of studies will be discussed in connection with "investigator controlled video". The first is an example of studies of parent (or teacher), child interaction wherein video recording was essential to the design of the study. The other is a series of studies wherein video recording enhanced the original study in the area and promises to make even further enhancement on this and related lines of research.

The first type is represented by two studies of the effects of a child's appearance on reactions by adults to "mistakes on a learning task" (Berkowitz and Frodi, 1979). The first study showed a 10-year-old girl who was made up to appear either attractive or less attractive. In a second study the child was a 10-year-old boy who was also made up to appear attractive or unattractive and who spoke normally or with a noticeable stammer. Over 50 females undergraduates in the first study and 40 in the second watched a videotape of an attractive or unattractive child supposedly performing a learning task. Through instructions and a carefully designed procedure, all of the subjects believed that they were watching a live child in the next room on closed circuit television, none reporting that they actually watched a videotape. When given opportunities to punish the child's mistakes by pressing one of ten buttons graduated to increasing levels of aversive noise, the subjects reliably punished the unattractive child more severely. To assess the fuller educational significance of these studies they might best be replicated by teachers and student teachers with various levels of experience, who are giving both rewards and punishments to children of varying ages, appearances and ethnic identification. This is not the point of interest here, however. Video recording enabled this research to be carried out in two important ways. First, it was used to simulate closed circuit "live" television. No other filmic technology could do this. Second, it provided an easily duplicated standard stimulus which could be used in replication or extension studies of these phenomena.

A second line of inquiry that illustrates video recording as an invaluable tool in the presentation of stimuli in educational research is the body of literature on "Educational Seduction". The original study (Naftulin, Ware and Donnelly, 1973) involved a lecture by a live professional actor who was advertised and introduced as Dr. Myron L. Fox, "a noted authority on his subject". After an enthusiastic lecture of less than an hour to an audience of mental health professionals and educators on the topic of Mathematical Game Theory Applied to Physical Education, the audience gave the speaker surprisingly high evaluations. The author's conclusions were that through wit, personality and the appearance of authority, an entertaining and charismatic lecturer who speaks deliberate nonsense can "seduce" students into believing they have learned something and into giving the presentation a high rating. Follow-up studies were performed more in the fashion of experiments than the initial demonstration, by standardizing the presentation into six 20-minute videotaped lectures using the original Dr. Fox actor and three levels of lecture content (low, medium and high) crossed with two levels of instructor expressiveness (low and high).

Further studies performed at the University of Manitoba by Perry and his colleagues (e.g., Perry, Abrami, & Leventhal, 1979) fit a tight two-by-two design wherein levels of expressiveness (low and high) were crossed with levels of content amount (low and high) in a factorial design wherein relevant main effects and interaction results could be identified and studied. As a consequence, we know far more today about the effects of expressiveness and content on both student ratings and achievement than hitherto. We know, for example that the "Dr. Fox effect" is not a reliable one nor a serious challenge to validity of student ratings of instruction. Video recording makes this line of research possible, replicable and extendable. Video has been indispensable in developing this line of inquiry in higher education.

The purpose here is not to evaluate this research, but to discuss the role of video as a research tool. In fact, the literature on educational seduction is based almost entirely on videotaped stimuli. Moreover, it has been suggested (Ray P. Perry, personal communication) that video recordings give us the possibility of constructing replicable teacher prototypes based on a finite number of specifiable teacher behaviours. If this potential is realized, then video recording technology will surely take its place as a major educational research tool for years to come. In related lines of inquiry, of course, it can be possible to construct counsellor prototypes, school administrators and other role models on video. However, it seems that the teacher in her or his role as information giver/inspirer can best be captured on recordings and studied systematically in this way.

Perhaps the greatest problem in using video stimuli for educational research lies in the possibility that subjects will "see" something different than the experimenter expects or believes them to. This can be a problem of differing perspective, lack of clear communication or of subjects who attend to different aspects of the stimulus than were intended by the experimenter. Perhaps the most promising approach to dealing with such problems is Argyris' recommendation (1976) of Model II or participative research designs. Following his advice, participants in research become partners of the investigator in designing and carrying out the investigations. Far from the deceptive procedures illustrated in studies such as those of Berkowitz described above, pre-briefing moves discussion of participants' awareness of the purpose of the design of the study forward in time from the traditional post-experimental de-briefing practices. In higher education research, the intelligence and motivation of participants are resources to be tapped in designing and conducting research studies.

Subject-controlled video recording in education is a research vehicle worthy of exploration. As initially with Dr. Fox activity to date has been largely at the demonstration level. For example, participants in college and university teaching seminars designed and conducted by the author learn to videotape each other's "microteaching" presentations. Then each participant is regarded as "owning" the recorded signal in terms of decisions about who will see it and when it will be replayed and how to use it in teaching improvement. Of course, the instructor makes suggestions about possibilities. This use of subject-controlled video in higher education has not been a part of a systematic program of research published to date. Similarly video recording mediated projects to improve university teaching (e.g., Menges, 1978) provide opportunities to design research whereby video is a major part of the differential experimental treatments.

Ethical issues in uses of video in research are suggested by studies such as those. Is it ethically responsible to knowingly deceive subjects or to expose students to extended periods of "low content" lecturing? The researchers cited here practised informed consent and/or debriefing and such procedures are recommended to others.

III. VIDEO RECORDING OF RESPONSES IN EDUCATIONAL RESEARCH

Just as anthropologists' field notes gave way to audiotape recordings and recently to portable battery-operated videotape recorders, the availability of video recording of the responses of experimental participants raises a host of research and ethical questions. This is particularly true when video recordings form unobtrusive measures as would be the case if video recordings designed to reduce shoplifting in stores were used in marketing research analyses.

Finally, attention needs to be paid to the research potential for the production of video recordings per se. A study of the actions and interactions of teams of students who are assigned tasks involving the production of video recordings is an area of research in its own right likely to yield hypotheses concerning group dynamics, decision making, individual and group creativity, etc.

IV. VIDEO RECORDING IN EDUCATIONAL RESEARCH PRESENTATION

Conventional films presenting the research of anthropologists (e.g., Margaret Mead and Ray L. Birdwhistell) have been invaluable in the dissemination of research to wide audiences. The potential of video recordings for such presentations is still largely untapped but the rapidly growing number of libraries, homes and offices with video playback equipment enhances the possibility of widespread development of this form of research dissemination.

Dissemination of research results to professors by means of audio and video recordings, at conferences or for review in one's office or perhaps while commuting to work on a pocket monitor is possible now and may become commonplace in the future.

Writeups of research procedures that include instructions read to participants only include the text of what was said. Rarely are clear directions given as to how it was said (vocal inflections, facial and bodily gestures, etc.). Video recordings make this kind of more precise replication of experimental conditions possible and feasible.

V. MULTIUSE OF VIDEO RECORDINGS IN RESEARCH AND EDUCATION - THE HDZ STUDIES

Finally, in collaboration with Michael Heger and the staff of the Higher Education Center (HDZ) at the Technical University of Aachen, the author conducted a series of studies on psychological aspects of anxiety and arousal in teaching during the 1981-82 academic year. One of these studies featured multiple use of video recordings and is described briefly here.

Two groups of 20 education students participated in a weekend block seminar on microteaching, communication skills, and anxiety reduction. Their videotaped presentations were used as training devices, but also their taped performance was scored on a variety of indices of observable stress developed by Foster and Heger for the purpose. These results were correlated with scores on published scales (e.g., Spielberger State and Trait Anxiety Inventory - STAI). In this investigation, video recordings formed the training task and provided a vehicle from which dependent measures were obtained. To the extent that the apparatus formed a part of the "audience" it also contributed to the stimuli towards which communications anxiety was expressed and eventually ameliorated. Although we have not done so yet, it would be possible for a video recording to be made describing the conduct of this research and its findings, thus providing video mediation of the dissemination phase as well (Heger, 1983).

VI. SUMMARY AND CONCLUSIONS

A number of examples, have been given for the use of video recording as a research tool in higher education. As a means of presenting stimuli, recording responses, as a vehicle for conveying experimental interventions, or to do any combination of these, video recording technology has been shown as a powerful tool; its use and potential contributions to behavioral research in general, and educational research in particular, were highlighted.

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REFERENCES

Abrami, P.C., Leventhal, L., and Perry, R.P. Educational seduction. Review of Educational Research, 1981, 52, 446-464.

Argyris, C. Theories of action that inhibit individual learning. American Psychologist, 1976, 31, 638-654.

Barbatsis, G.S. The nature of inquiry and analyses of theoretical progress in instructional television from 1950-1970. Review of Educational Research, 1978, 48, 399-414.

Berkowitz, L. and Frodi, A. Reactions to a child's mistakes as affected by her/his looks and speech. Social Psychology Quarterly, 1979, 42, 420-425.

Heger, M. Erfassung und bewaltigung von nervosität und in praxisnahn Trainingssituationen: Auswertung eines Wochenendseminares des HDZ-Aachen für Lehramtsstudenten. Aachen/HDZ. Research Report # 17, 1983.

Menges, R.J. Raising consciousness about teaching: New use for Videotape. Symposium paper, 86th Annual meeting of American Psychological Assoc., 1978, Toronto.

Naftulin, D.H., Ware, J.E., Jr., and Donnelly, F.A. The Doctor Fox Lecture: A paradigm of Educational seduction. Journal of Medical Education, 1979, 71, 339-345.

Perry, R.P., Abrami, P.C., & Leventhal, L. Educational seduction: The effect of instructor expressiveness and lecture control on student ratios and achievement. Journal of Educational Psychology, 1979, 71, 107-116.

USING VIDEO TO TEACH ECONOMICS

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I might explain at the outset that my interest in video is primarily that of an economist who uses video as one means to teach economics and that I teach both off campus and on campus students. Although a lot of what I have done in video is concerned with teaching distant students, many of the principles I will evoke are relevant to on campus teaching.

I will structure any remarks around three major questions:

1. Why use video to teach economics?
2. Why use video rather than television to teach economics in distance education?
3. How should a video presentation in economics teaching be structured?

In teaching economics I use a two tier approach; in the first tier students have to learn the basics of the discipline. They have to learn the fundamental skills of the economist, the important concepts and ideas which are the essence of the economist's trade.

In the second tier, students have to apply the basic concepts of the first tier to the solution of problems and in doing so need to be able to apply concepts to new situations and circumstances. As well in the second tier students have to be able to acquire analytical and critical skills. To be fully effective in teaching economics, one has to use slightly different approach, if only in emphasis, in each of the tiers. My use of video has been primarily directed towards the first tier approach although it is clear that video presentations can effectively bridge the gap between the two.

Modern economic analysis makes intensive use of mathematical and graphic techniques and video can be used in many ways, some of them unique, to illustrate and explain these teaching uses.

However one of the most important reasons for using video to teach economics is derived from the nature of the subject itself. Economics is self-described as the science of choice; economics explains how consumers, firms, economies choose a preferred solution from a range of possible options under given constraints. I am, in consequence, rather surprised at how we teach economics. The standard beginning economics course commences with the lecturer explaining how economics is the science of choice and then quite seriously and with a straight facing announcing that the course "will meet at 10 a.m. on Tuesdays and Thursdays; students are required to submit one essay for 40% of the course grade and the examination will be held at the end of semester!"

Research into economics education has shown very clearly that we cannot fully explain how students learn economics but it also shows that different students learn in different ways. Hence, to me at least, it seems perfectly rational to provide a variety of learning techniques for students and to allow them to select what they regard as being appropriate.

In considering my second question, why use video instead of television for teaching economics at a distance?, I will refer to three major reasons for preferring video. First of all, video allows students to use material at their own time and their own pace. Broadcast television on the other hand constrains students to watching a programme at a specific time and the experience of the

British Open University suggests that the times available for broadcasting will, for non-educational reasons, be pushed further and further back into the unsociable and inconvenient times of the early morning and late at night. Also the experience of the Open University suggests that many students, and I have some first hand knowledge of this, video tape the broadcast programme for viewing at a more convenient time!

Secondly there is some evidence, again from the Open University experience, that students have tended to regard television programmes on economics as entertainment and we all know that learning can't be fun!

Thirdly it appears very clear now that video in education generally has a large potential due to the increased and increasing ownership of video cassette recorders. (In Australia it is estimated that about 20 per cent of homes currently have video.)

There are five points I would like to make in answer to my third question, How should a video presentation in teaching economics be structured?:

(a) the video presentation should have a clear didactic intent - that is, it must include a statement of learning objectives in some form. This is the first feature which distinguishes a presentation designed to teach from one designed to entertain.

(b) the academic content of the presentation must dominate the style of presentation. Although it is important that a teaching presentation uses good video practice and good style, it must not be forgotten that the academic purpose of the video is of prime importance and if there is to be a trade-off between style and content, then content must always be given top priority.

(c) the video presentation must be interactive with the viewer - it should not be a passive means [illegible] conveying information. One technique to make the presentation interactive is to require the viewers to turn off the video-player and perform a task or solve a problem and then to restart the video-player and compare their solutions to the one in the presentation.

(d) a video presentation should make use of the special and distinctive features of video rather than merely try to translate some other medium into video. [illegible] I do not think it a very useful procedure to video-tape a lecture for later showing. This is still a second hand lecture not a first hand video presentation.

(e) the video presentation should be an independent and self contained production; it should be able to stand alone and be viewed without supporting material. Having said this, it is only fair to point out that the effectiveness of video presentations in teaching economics can be increased if there is an associated written text.

I have spoken rather briefly about this matter due to the lack of time but would be more than happy to respond to questions and comments. Much of my work in video has been carried out in conjunction with Wolfram Laaser whose peper does expand on several areas where I have touched briefly. Thank you for your attention.

DIDACTIC DESIGN OF VIDEO INSTRUCTION IN DISTANCE EDUCATION

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1. Introduction

The purpose of this paper is to make some suggestions about the didactics of videotape-instruction. It starts with a rough classification of the different types of instructional programs. Then the internal structure of those programs that replace traditional face of face teaching in a system of distance education will be discussed. This type of program is analyzed in the light of advantages and disadvantages of video compared to printed course material. We then consider what theories of learning can contribute to design of video tape instruction, and in this context we are especially interested in psychological theories of perception. The essence of the didactic principles will be applied to three important characteristics of video instruction, namely the presentation format, graphics and the interaction between the program and the learner.

2. Types of programs

The didactic structure of a program depends on the kind of scientific subject and on its special learning objectives. In distance education we find various kinds of programs. Most common are the following:

- programs that illustrate theories or concepts by real life situations. Here the underlying theories are not developed systematically within the program.

- programs that correspond to traditional classroom activities e.g. lectures or tutorials. Here theories are explained or summarized and some points are discussed in detail. Sometimes exercises are added to reinforce learning.
- programs that give additional information beyond the correspondence text to enrich students understanding.
- programs that replace real life experience of students, e.g. laboratory experiments or group excursions.
- programs that try to promote discussion among students.
- programs to train and supervise personal behavior and attitudes of students (e.g. micro teaching).
- programs to stimulate research, e.g., interactive programs with use of computer graphics

Of course this list of general objectives is far from complete and some subgroups overlap. But it does give an idea of the wide range of possible applications in the area of distance education.

In what follows we would like to concentrate on video instruction that try to compensate for the lack of traditional classroom teaching in distance education. Our main concern is to provide sufficient tutorial support. As mentioned above we can find a variety of didactic functions that can be met by video tape instruction but clearly one of the most important failures of video is its lack of spontanous interaction. To overcome this we need cable-TV or telephone conferences; these are not discussed here. As the most important medium used for lecturing in distance education is the correspondence text, we discuss first the relation of video to printed instruction.

Video tapes can function as a kind of advance organizer to give students a rough cognitive structure of the subject matter to be studied in the correspondence text. Equally they may serve as a repetition of theories learned already with the print material. Both functions may be met effectively by video instruction because the amount of students learning time needed to aquire or repeat a cognitive structure will be smaller when video instruction is used than by reading a textbook.

A video type can also provide two additional functions in relation to print material; it can either add new information about the subject matter or it can clarify concepts covered by the correspondence text. Whatever the objective of a video program may be, it is important to inform the student about these objectives. This is helpful not only for the student's decision to use or not to use the program but it is also indispensable for later evaluation of the program.

3. The internal structure of a program

Once the general objectives of a program are determined, we have to decide on the internal structure of the program. Video tapes of a tutorial character should use a similar didactic structure as traditional classroom activities. That means we should follow the usually proposed steps of

- motivation (introduction to the problem)
- first simple solution of the problem
- training and re-inforcement of the understanding
- critical approach to the first solution given and extension of the problem

- second more complex solution
- exercise to handle the knowledge acquired
- extended aspects of the concept.

This kind of structure also depends on the special type of program and its objectives. But if we assume a program duration of 3o to 40 minutes, which is more or less typical for video instruction at university level education, the didactics of traditional classroom activities are likely to be relevant to the structure of the video program. This is true for the style of teaching as well as for the natural curve of viewers concentration which is skewed to the left.

Apart from these common features of video instruction and traditional face to face teaching, video has a range of presentation formats which are more or less unique to the film medium.

We would like to illustrate this by giving a table of different didactic sequences and related possible presentation modes:

didactic function	mode of presentation
motivation	rough real life illustration, abstract associative images, interview with persons (experts or laymen)
exposition of the problem and first solution	presentation by the teacher with help of graphics. Discussion of the solution
exercise	working pause, stopping the tape. Later on explanation of the correct solution presented by the teacher.
critical review and extension of the problem	instruction given by the teacher, use of animation sequences, real life illustrations, case study material
exercise of extended problem solving	same as before
final review and discussion of the concept	group discussion with students, summary and final statement of the presentator

This is only an example and the possible practical solutions are of course numerous. The video instruction should also allow periodically time for the viewer to relax including sequences with low content of information or a direct suggestion to stop the tape for a few minutes to review the arguments without watching the tape.

4. The transformation of a scientific concept into a video presentation

In this section we will discuss the process of transformation of a scientific concept into a video presentation in the light of some media attributes of video. The starting point of most instructional films at university level is a scientific script in its traditional sense. This is usually so when authors are not very familiar with filming. As a basis for developing the later film script the scientific script should have as as minimum perequisite a clear cut logical structure. To transform the text into a film script the text has to be split into single sentences or small blocks of sentences. First rough visual illustrations can be added to each block in a special column. As a result of this procedure it becomes obvious that some aspects of the text need additional comments and that others are inadequate. This first stage of the preparation of a film script leads to a modification of the initial text formulation.

A remark of G. Klotz (1980) may illustrate the problem when he claims that most authors neglect visual communication when they write film scripts. They miss the specifics of the media. Verbal comments are less important in filming than in writing while the language of abstract symbols gains a dominating influence in film.

After these more general remarks we will extend our discussion of design aspects by referring to some charateristics of video compared to written instruction.

5. Didactical disadvantages and advantages of video compared to print material

With video any picture shown on the screen lasts only for a very short time even though there exist the possibilites of rewinding or stopping the tape. This is different to print material where the information of two pages is always visible.

Instructional filming has to provide a lot of additional structuring elements to compensate for this deficit. This has to be kept in mind when we formulate the general didactic approach to present a given scientific concept. Basically it has proved helpful to explain e.g. concepts of economics or mathematics by starting from a simple basic model or idea and then to extend it to the more complex case. So the viewer remembers the basic framework. This structure can be emphazised when we try to develop a basic graphic which is repeated from time to time throughout the tape and which expresses precisely the line of thought. Also clearly determined use of colours or symbols can ease cognitive perception.

Compared to print material instructional films need more repetition. This can be achieved by including summaries or short visual repetitions of important film sequences.
Another important characteristic of video instruction is the limited amount of information that can be represented on a single frame. This arises from the size of the screen and videos limited resolution of images. So the final information can be built up only by a sequence of frames. Complex graphs or formulas have to be split up into its components or have to be included into accompanying print material.

To find sequences in a given tape may be cumbersome because frames are not numbered like pages in a book. This means that additional structuring devices have to be included to facilitate repetitions. One of the best means to do this would be to provide a clear modular structure of the program with short properly defined sequences.

Of course video has a set of advantages compared to print material. One of the most important is the great amount of variability in combining different pictures. A complex final graph is easily built up by a rapid sequence of single frames. This calls for a stepwise but continous development of the scientific reasoning.

Information can be given just at the moment when it is needed and can be dropped when it is not necessary any more. Also parts of the picture can be modified or hidden. Text and symbols can be attached or removed. Static images can be combined with moving images. To do the same with print material perhaps a hundred pages would be necessary. This points out the extremly rich potential of this medium.
Similar observations can be made with regard to the use of colours. In print material the colour is fixed whereas in video colourfields can easily modify the colours attached even to small parts of the picture.

Finally it goes without saying that video or film is able to show movements. This can be used in animation as well as in the presentation of real life events. Dynamic animation certainly is more difficult to achieve with video than with film because it is not prepared from single frame shooting. But simple dynamic movements can be approximated with stop tricks as well, though not in such a refined manner as the animation film is capable of providing.

Video allows for simultanous viewing and listening which can be done as well with film or classroom teaching but cannot be done with print or audio material. However video has an important advantage over films due to the technique of producing video. The producer is in complete charge of video production and can immediately correct mistakes during the production process.

The didactic characteristics of video, especially its failures and advantages have to be kept in mind if the medium is used. Summarizing the most important advantages we have found so far

- variable composition of pictures
- various possibilities to relate single images
- presentation of movements
- synchronism of sound and picture

6. Design in the light of perception theory

In this section we will analyse some ideas of the theories of perception and their implications for the design of instructional video tapes. (For a more general view see Fleming 1975).

Learning happens only after perception. That means that we have to give enough time to the learner to perceive the information. The existence of a variety of video tricks and techniques to move images provides a great temptation to change images too quickly. As the learner has no influence on the speed of the presentation we have to slow down the "drive" when the information transmitted is complex or when the subject matter is difficult to understand. To give an example: If we have to show a complicated mathematical derivation we should develop the problem on the screen by handwriting rather than by pure animation, because the natural speed of a hand written sequence is substantially lower than the same done by animation. If there is not enough time to perceive the information, the amount of learning will be reduced.

Perception is more relative than absolute. While flashing of a certain element in a picture within a static image can easily attract attention the same won't be true in a moving image. The effective level of stimulation depends on the previous stimulus level. So it may be necessary to use a stronger stimulus at the beginning of a tape to overcome the previous state of passivity. Therefore real life illustrations or moving images may well be used at the beginning of an instructional film. But it is also valid to point out that the level of interest can not be raised by ever increasing the level of stimulation. Too rapid a change can distract the viewer: however a change in presentation formats such as an animation sequence, real life illustration or interviews can introduce some variety in the video presentation. We have also to keep in mind that instructional films are not commercials and that we should not distract the viewers interest from understanding the scientific message.

Furthermore we have to take account of the viewers natural curve of concentration. Just as in lecturing the most difficult parts of a concept should not be given last. It is necessary to have introduced the difficult parts of the concept before half the running time is over. If we work with a video of 30 or 40 minutes this of course means that the difficult concepts should be explained in the first 15 minutes.

Another postulate of perception theory is that human perception is selective. That means that each perceiving channel has a limited absorptive capacity and that informations simultanously received from serveral channels are only absorbed partially. So it is important to relate properly information given by sound and by picture. If the information on the visual channel is high, information on the audio side should be low. If visual information consists only of a talking head audio information can be rather high. But we have to consider also complementary effects of the two channels. The better the audio information supports the visual or vice versa the easier is the mental processing of the information. But it is also generally valid that multichannel information is only helpful if transmission speed is fairly low. If sound and picture information are more or less disconnected we will have a low level of information perceived. Sometimes we can find in instructional films that a voice commentary is accompanied by music too. This obviously limits the viewers ability to concentrate on the subject matter.

We have to make use also of the selectivity of human perception. We can do this by directing the viewers interest to certain parts of a picture e.g. by electronic flashing, by the speakers voice or by insertion of colour fields or by zooming in.

Human perception is structured. We have already mentioned various possibilities to reinforce this cognitive process when we dealt with advance organizers, use of colours and graphic symbols. Sound codes, such as a short sequence of electronically generated tones, can be used as an additional structuring device if it has a clearly determined meaning to the viewer, e.g. to relax or to pay attention.

Perception of information is also facilitated when the different takes or frames are not separated by hard cuts but by soft superimposition maintaining certain common elements while introducing new ones.

Normally perception starts from the concrete going to more abstract reasoning. In general a scientific concept may often better be introduced by real life illustration.

Finally we should mention the principle of constant pattern of perception. This means that familiar objects keep their meaning even if the surrounding stimulus changes. We can take advantage of this pattern when we design graphics or symbols. Every characteristic form should have a clearly defined meaning throughout the film. So we can save a lot of verbal explanation and provide for immediate understanding.

7. Design of single elements

7.1 Presentation

The role of the presentator is very important in video instruction that replaces traditional face to face teaching. The presentator guides the student through the program. He comments on animation or graphs and he may demonstrate the derivation of an idea by writing or drawing. This is similar to classroom teaching but it is not exactly the same.

According to G. Klotz (1980) we can observe three different modes of presentation

- presentation based on verbal explanation
- presentation based on presenting facts
- presentation based on creating imagination

Within the first mode talking is the predominant mode of explanation, though graphs or models may be presented. The personal appearance of the presentator on the screen is at the core of the program. The position is different when facts are presented. Facts should not need so many additional comments. So the importance of the presentator is reduced. The importance of the presentator is further reduced when the essence of teaching is given by abstract graphics and symbols combined in animation sequences. Additional comments to explain what happens on the screen can even destroy the process of imagination. So the more complex the visual presentation the less use should be made of verbal comments to allow for full concentration on part of the student.

In simultanous viewing and listening more complex information can be perceived than by the audio channel alone. That means if the verbal information is complicated, the picture of the speaker can facilitate understanding. In any case verbal information should be easy to understand. One of the rules to achieve this is to use short sentences and simple construction of phrases. It is also helpful to mention first the most important information and only then all related information. Storage capacity of human short-time memory is very limited. Information that can not be related to previous information or cognitive structures will not be transferred to long-time memory and thereby will get lost.

The foregoing observations favour the use of professional announcers rather than the authors of the related correspondence units or other academic staff as presentators. There are other considerations which suggest that there are difficulties in using professional announcers. Professional announcers are expensive to employ. They do not identify themselves with the subject matter they are talking about. They are not imbedded into the educational institution and so they don't mean anything as a person to the student in distance education. According to some findings of G. Coldevin (1979) students are generally very benevolent towards unprofessional academic presentation of TV-programs if the programs are useful in general.

7.2 Graphics and animation

We will discuss some ideas how to use effectfully visual elements in video instruction. One idea that has been considered in the literature is that learning tends to be easier when visual presentation is close to the real image of an object because the amount of decoding is less for the viewer. This has been checked experimentally by Dwyer (1967), who used different representations of a human heart model. His findings indicated that abstract representation is sometimes even more effective for cognitive learning than from real images like photography. This also corresponds to our experience.

To prepare graphics we can use some principles of the "Gestalt-psychology". This theory claimes that good forms should correspond to the laws of proximaty, equality, closedness, experience and exactitude. All these ideas are quite useful, when symbols and graphics have to be constructed. Within this area some other findings are useful as well. For example horizontal and vertical lines are easier perceived than other lines. Lines are easier understood than curves. Short visual symbols which represent a condensed form of natural or real life images may be easier to perceive than f.e. mathematical symbols. But the last observation may not always be valid because the student may be already familiar with certain symbols from textbooks so that a new way to code and decode the symbol will be an additional burden to the student (law of experience). For example the abstract letter A(standing for Agriculture) may be easier to identify in a given context than the picture of a cow to represent the same information.

Most aspects we have discussed so far under the heading of graphs are by no means applicable to graphic representation in print material as well as in video instruction. What then makes graphics different in video? First, attention can easily directed by verbal comment and by a variety of visual stimuli within an existing picture by use of different video tricks. We have dealt with these possibilities already a bit before. But to us the essence of video or filming is the possibility to create a dynamic process of imagination by visually interrelated sequences. To explain this we would like to cite G. Klotz (1980) once more: "We can aquire a new communicative and cognitive dimension by dynamic movement of signs and forms. The dynamic process can be created by continously adding or reducing information included to a given picture."

Relation between different pictures can be established e.g. by superimposition. Presentation by the speaker can be underlined by a back ground picture. We are still far from having any theory about these design principles and perhaps we will never have one. But we should try to discover the didactic potential of these new media attributes.

7.3. Interactive design of video instruction

Instructional video tapes should provide for interaction with the viewer to overcome passive learning attitudes. According to Gayeski and Williams (1980) we can distinguish four levels of interaction with the learner:

- the presentator asks the student to concentrate on certain special aspects of the video presentation
- the presentator asks the student to stop the tape and to answer questions
- the program is branched according to students response in answering the questions, but to do this the student has to rewind the tape himself to find the respective sequence
- automatic branching according to students response including use of a microcomputer together with the video instruction.

At university level strictly programmed instruction has found no application on a significant scale. This is because of large amount of time necessary to prepare the material and because the program is inflexible. Therefore video programs which include only some exercises given with a short accompanying text may provide for sufficient interaction without putting too many restrictions on the program design.

8. Concluding remarks

With these remarks we would like to finish the short discussion on the didactic design of video instruction. We are only at the beginning of thinking about these problems which have come from our recent practical experience in this field of instruction. But it may be more important to think about the didactic potential of video instruction than to ignore the media attributes in simple experimental comparisons with other media.

References

(1) G.R. KLOTZ, Bild-Orientierung und Darbietungsweisen im Hochschulfernsehen, in: Zeitschrift für erziehungswissenschaftliche Forschung, No. 14/1980 P. 3

(2) M.L. FLEMING, Wahrnehmungsprinzipien für das Entwerfen von Lehrmaterial, in: AV-Forschung, FWU (Ed.), Vol. 13 1975, P. 7 - 73

(3) G.O. COLDEVIN, The Effects of Placement, Delivery Format and Missed Cues on TV Presenter Ratings, in: Experimental Research in TV-Instruction, J. Baggaley, J. Sharp (Eds.), Newfoundland, Canada 1979, P. 73 ff.

(4) D.M. GAYESKI, D.V. WILLIAMS, Program Design for Interactive Video, in: Educational and Industrial TV, Dez. 1980, P. 31-34

(5) DWYER Jr., Adapting Visual Illustrations for Effective Learning, in: Harvard Educational Review, No. 37/1967, P. 250 f.

University Organization and Governance

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One of the most challenging and difficult puzzles confronting society and, within it, the university, is that of forecasting the future. The recent economic recession and concomitant demand for resourcefulness have thrown not only political leaders but university planners into the position of questioning priorities and means of achieving them. Within the university, attempts to deal with the future and possible adaptations of the university to it raise the spectre of different roles the university might play. One role would be for the university to focus on technology (Henchey, 1983). Government pressure in North America to emphasize science and technology appears at the current time to have exceeded that of the sputnik era as fibre optics, satellite transmission, and personal computers monopolize discussions. In Canada the Learned Society of Higher Education at its annual conference this year addressed the issue of information technology and its effects on higher education. Universities query the trend to greater technology but more from the standpoint of who will control and fund technological advances than whether universities should make it a priority in their planning (Le Devoir, 1983).

Another vision would be for the university to become an ally of government in determining the future of society or in working with it as a partner in social change (Conseil Superieur, 1981; OECD, 1982). In this role, the university would make decisions and provide guidance for the nation. The role would, however, prevent the university from playing one of its oldest and most essential roles as critic of society, which the university can play only if it retains autonomy from the state. Henchey fears that the university currently runs the risk of becoming the servant of an authoritarian state when its essential role is to be the disinterested and measured critic in scientific, cultural, philosophical and political matters, a role which obliges the university to be apart from as well as a part of the social structure. A third scenario paints the university as museum, as a storehouse of knowledge, and non-adaptative within society. The effect of this role would be a smaller voice in society with fewer resources and minimized status. It is, however, in essential agreement with one of the university's current roles as documentor of knowledge.

The most viable and interesting role for the university to play, however, is that described by Henchey as nerve center of a learning society. For Henchey, this suggests increasing attention to the quality of our systems of meaning, our theories, models, and methods by which we organize our information. To play this role, the university must concentrate on determining what is significant and on exploring the criteria for making this determination. Research into the brain and cognition suggests that a view of knowledge as a dynamic and developing web of relationships is a more accurate perspective to work from than the view of knowledge as objective and precisely quantifiable. The particular role of the university then becomes the stimulation of inquiry and reflection. In such a milieu the learning priorities include analytic logic, competence in interpreting information from a variety of media, the ability to select what is significant from a veritable ocean of data, to communicate meaning in diverse forms, and to recognize the strengths and limitations of different perspectives and paradigms. Of the four roles, this is the most challenging and humane direction for the university to take but it would require changes in the way in which the university is organized to operate.

When the university is perceived as an organization, it is usually in terms of how decisions are made rather than in what it considers significant, which it would have to consider if it played the role of learning center. The concept of determining priorities and planning to achieve them has gone against another university tradition of personal and disciplinary autonomy. Priority-setting and planning demand a major adaptation on the part of an institution often described as "organized anarchy." What this form of university organization, or limited organization does suppose, however, is heterogeneity of values, which would suggest a multiple view of what is significant. Many regard this diversity of perspective as critical to intellectual development and the life of an institution of higher learning. Is it possible to have an element of organized anarchy and still determine what is significant? It suggests an analogy to residuals in multivariate analysis.

Let us leave this question for the moment and look at another form of university organization, the political model (Taylor, 1983). This model of university governance is also pluralistic, but views the decision-making process as one of negotiation and influence. This would appear to be far from our ideal future role for the university, as in the bath of relativity created by the political model, significance falls prey to the fad of the moment, and criteria for significance are simply not attended to, let alone valued. This model is in conflict at many levels with the concept of the university as the nerve center of a learning society.

The alternative decision-making model most frequently suggested by industry is the bureaucratic hierarchy, in which people of ever-increasing capacity make ever more far-reaching decisions about the life of the institution. The problem with this model is that it runs counter to the prevailing fact that most academicians sooner or later face: they, as representatives of the most capable, quickly find that a variety of equally capable people do not agree with them and, as well, make very different and equally valid contributions to the operation of the organization. The conception of knowledge as unitary and objective which is supposed by the bureaucratic model runs counter to the more dynamic view of knowledge as a developing web of relationships.

This leaves us with one last model of university organization, the professional or collegial model, which assumes a community of peers who make decisions through participation and consensus. This model has been maligned as ineffectual in recent years, as unionized faculty and estranged administrations fill the pages of the chronicles and bulletins of higher education with conflict. It comes the closest, however, to resembling Theory Z management, the Japanese approach to corporate management. Nichols (1982), in recommending Theory Z management to academe, describes it as a purposely slow decision-making process that gathers facts, seeks opinions, discovers relationships, and builds a consensus that gives a decision, once made, a real chance for successful implementation. Quality is the responsibility of all participants and the goals are clear and well articulated.

Having examined alternative roles for the university to play, and selected the most likely, then having compared different forms of university organization and determined which form is most likely to support that role, our next task becomes one of examining the limits and potential of the collegial or professional model. The collegial model is posited on the axiom that all faculty are considered to be experts in their fields who come together to develop resolutions by consensus. This assumes a mutually supportive environment of peers. But the reality is that within each discipline and across the university there are a limited number of full professorships and limited means for sociopolitical, if not intellectual, advancement (Donald, 1981). Within any faculty or department, few can receive the affirmation of a headship or other honors, and the knowledge that decisions and salaries are not evenly or equally distributed dampens the glow of collegiality. Across the university, interdisciplinary competition for programs and resources, and between faculties which have a different market status, further limits collegiality. Members of professional faculties such as medicine or law are frequently paid more than arts and science professors because the professional faculties must be competitive with salaries outside the university. Rank and seniority further contribute to wage disparities, hence the peer relationship is even more limited. The relative seniority and power of different disciplines exacerbates peer relationships: more entrenched faculties have greater credibility and therefore are more effective in determining the direction decisions will take. Thus the collegial model cannot overcome political inequities; it can only provide opportunity to participate in decision-making.

Within the university as a whole, the collegial model encounters another barrier. The traditional collegial pattern of decision-making has tended to focus on internal academic concerns such as programs, departmental governance, and personnel decisions, including hiring, promotion and tenure. Another system of university governance, however, has dealt with budgets, admissions, and physical facilities. This administrative system has been hierarchically organized with clear delegation of authority and responsibility for functions (Spiro & Campbell, 1983). With increased academic concern over budgets, resource allocation, and personnel reductions, the loosely defined academic/collegial governance system is tending to increase its interest in decision areas previously governed by a hierarchical system. Thus a potential dislocation in governing procedures has been induced by the recession and concomitant demand for greater control over resources on the part of the professoriate. This situation further suggests a distraction of academics from their primary mission of the advancement of learning. Spiro and Campbell also suggest the introduction of Japanese management techniques to increase the effectiveness of higher education institutions while resolving the potential conflict between academic and administrative governance procedures.

The Japanese management techniques in some ways already fit current university organization but would require certain modifications in academic governance procedures. One supposition the Japanese techniques make is long-term employment. Given current educational and demographic trends, employment in universities will increasingly follow this pattern. One difference from the Japanese situation of frequent job rotation could be expected to occur in the university in a limited manner and primarily through changes in courses taught or committee membership. Following the Japanese model, according to Spiro and Campbell, would require faculty to expand their teaching expertise into associated disciplines. Another Japanese management technique that universities are moving toward is that of planning and evaluation as long-term processes. A series of plans: long-term, mid-term, and short-term operating plans, of which the latter is required to be detailed and measurable, are used (Pascale & Athos, 1981). The short-term operating plan is developed so that expectations can be measured against actual performance. Although a sizeable proportion of academics may shudder at the thought of implementing such procedures, cyclical review and planning procedures are, in fact, in place in many universities and colleges (Donald, 1982).

A third direction that Japanese management suggests is increased emphasis on staff development. Instead of high degrees of specialization, the Japanese develop generalists through a series of varied experiences, with a high degree of coordination resulting from this practice. Although this runs counter to the demands for the specialization necessary to support continued expertise in an academic field, it could act as a balance against faculty burnout by offering new areas or alternatives for growth. The areas in which this development is most likely to occur are the academic governing areas in the university, suggesting a trend to increased participation on university committees. One other area of potential development would be in curriculum. This would require members of a discipline to work together to elucidate their programs and the instructional methods that are used. This direction of faculty development would be closer to the traditional academic mission, but in some cases, it would require a major adjustment in the way colleagues approach and deal with each other, and it would require an equally great adaptation for those who consider academic autonomy axiomatic.

The steps for moving organizations into the Japanese style suggested by Ouchi (1981) include implementing a teamwork approach, focussing on initiative, encouraging staff satisfaction and development, implementing a grassroots or "authority is delegated upward" perspective, developing visible management, providing consensus decision-making, and having concern for information collection and participative planning and control systems. These suggestions coincide with the procedures currently being tested in universities which have adapted a cyclical review procedure based on unit self-study. The self-study process as instituted at McGill University is a set of procedures for clarifying goals so that department members can guide their own and the department's development. The self-study process thus becomes a means for establishing a degree of consensus about the aims of the department, the means for achieving these aims, and the standards the department will use to determine whether these aims have been achieved.

The process is based on the three criteria of participation, creativity, particularly in terms of faculty members' openness, flexibility, and willingness to consider change, and distributed responsibility. The process requires the acceptance of divergent perspectives and the ability to synthesize to produce a comprehensive analysis. The set of tasks involved in the process are distributed so that specific responsibilities are undertaken by subgroups, but the department as a whole is responsible for the major tasks. A steering committee outlines a potential design of how the self-study would actually take place, including a timeline. Two specialized task forces with particular competencies in the areas (1) collect and analyze data and (2) write the report. The three major tasks to be undertaken by the department as a whole are (1) the development of department goals; (2) future planning; and (3) discussion and editing of the report. The steering committee's role is to focus on the broad goals of the department while the specialized task forces provide a comparative perspective on the department. Thus both a broad perspective and continuity are provided for.

The development of department goals follows a modified Delphi technique. Department goal statements from previous annual reports, calendar announcements and program descriptions are distributed to faculty and individual faculty members prepare a draft of their own goals and those of the department for the next five years to bring to the department meeting on goals. At this meeting, faculty members form small groups of

4 or 5 to discuss and compare goal statements and to develop a set of agreed upon goals. These goals are then posted and general discussion centers on the similarities and differences among the different groups' goals. From this discussion, a synthesized goal statement is produced with which faculty members may then compare their own goals. This procedure invites participation and clarifies the goals of department members and the department as a whole. It provides the context for grassroots decision-making while it promotes consensus.

The second major task for the department is an assessment of its expectations compared with its performance, based on the data collection and analysis done by that task force. Plans and priorities for the next five years are made in terms of the unit's goals, its current resources, and the feasibility of implementing the plans. The department members have one further major task, discussing and editing the self-study report. This ensures the shared responsibility of the members for the department's evaluation and planning. Thus the self-study model presents in microcosm the set of procedures needed to achieve the form of university governance most likely to be effective.

How do these governance procedures fit with the idea of the university as a nerve center for a learning society? Can we say that the self-study procedure is analogous to a cell assembly in the governance of the university? It is already a complex and demanding set of steps, but it is a basic institutional adaptive mechanism. It allows for divergent opinion but tends toward goal consensus. It requires shared responsibility and a consideration of faculty development. Most important, it provides the milieu for determining what is significant and what criteria will be used to judge the quality of meaning. It demands inquiry and reflection. Could these procedures be translated into the teaching and learning process? In adult learning circles, this is already the case. As in the Knowledge Network system developed in the province of British Columbia, learning is non-hierarchical and consists of a combination of individual initiative (Forsythe, 1982). The trend toward holistic and balanced education is reflected in these practices.

References

Bess, J. L. *Faculty perspectives on administrator effectiveness (II): The influence of personality type*. Paper presented at the annual meeting of the American Educational Research Association, Montreal, 1983.

Bess, J. L. *University organization*. New York: Human Sciences Press, 1982.

Conseil Superieur de l'Education. Le role du professeur d'Universite. Quebec, octobre 1982.

Donald, J. G. The context of higher education: dealing with value conflicts. *Proceedings of the Seventh International Conference on* Improving University Teaching, Tsukuba, Japan, 1981, *7*, 480-490.

Donald, J. G. A critical appraisal of the state of evaluation in higher education in Canada. *Assessment and Evaluation in Higher Education*, 1982, *7* (2), 108-125.

Forsythe, K. Learning systems report, in *Knowledge Network: Second Annual Report*, June 1982.

Kilmann, R. J., & Herden, R. P. Towards a systemic methodology for evaluating the impact of interventions on organizational effectiveness. *Academy of Management Review*, July 1976, *1* (3), 87-98.

Le Devoir. Le projet de loi sur le developpement scientifique souleve la mefiance generale du monde universitaire, par Rodolphe Morisette, 3 juin, 1983.

Nichols, D. A. Can "Theory Z" be applied to academic management? *The Chronicle of Higher Education*, September 1982, 72.

Organization for Economic Cooperation and Development. *The university and the community*. Paris Cedex, 1982.

Ouchi, W. *Theory Z: how American business can meet the Japanese challenge*. Reading: Addison-Wesley Publishing Co., 1981.

Pascale, R. T., & Atnos, A. G. *The art of Japanese management*. New York: Warner Books, 1981.

Spiro, L. M., & Campbell, J. F. *Higher education and Japanese management: are they compatible?* Paper presented at the annual meeting of the Association for Institutional Research, Toronto, 1983.

Taylor, W. H. The nature of policy-making in universities. *The Canadian Journal of Higher Education*, 1983, *XIII* (1), 17-31.

UNDERSTANDING THE UNIVERSITY AND ITS ORGANIZATION

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Universities are social systems: changing, developing, sometimes regressing, with conflicts and agreements, they are unique. Following SUNY's motto: "To teach, to search, to serve", the members (especially the faculty) of a university or college introduce students into sciences and professions, contribute to the pool of knowledge and render services for different organizations including the university. Each of these activities needs special qualities: *freedom* for research, freedom and *equality* for service, and freedom, equality and *love* for teaching. Many conflicts are caused by ignoring or misunderstanding the differences between the three activities and the supreme qualities.

These three attributes are also constitutional for the three developing stages of an organization. I call them the pioneering, organizational and integrational stages Lievegoed, p. 43). The thesis 'pioneer' calls for an antithesis 'organization', and this determines the synthesis which integrates the two qualities with the help of a third one: love. To realize all three qualities the organization more or less has to experience the first two before entering the third one.

The pioneer stage

The pioneer is the founder, creator, or pathfinder of the organization. The characteristics of this stage are: flexibility, creativity, change, and fast decisions. The pioneer is the head and the heart of the organization, but also the best informed man or woman. So the peripheral problem (of informing the periphery about the intentions of the center and the center about what the periphery senses) doesn't exist.

For creativity, self-realization (realizing own ideas) and self-finding (choosing and supporting a system of a higher order, e.g. a religion, sometimes business), to be a member of a higher order, freedom is necessary. Freedom is the characteristic attribute of a sound pioneer organization. But the employees are bound to the pioneer. He/she works best when co-workers are helping him/her like assistants, completing his/her missing capacity. Freedom is the central quality for the Humboldtian type of university, which was proposed as a center of research (Ruegg, P. 11), unifying professors and students And still today, liberty is claimed by nearly all college and university teachers as a constitutional condition for successful searching and teaching. But there are students who can not be treated like obedient servants, and there is an administration, representing the public opinion (the taxpayers and the supporters of the university) with its own rules, that cannot be neglected. And finally, and organization which follows only the principle of freedom is an organized anarchy (Ellström, p. 235) with three general characteristics: "Firstly, there are inconsistent and ill-defined goals and preferences", "secondly, organizational processes and technology are unclear or poorly understood by the members of the organization", and "thirdly, there is fluid and part-time participation".

The organizational stage

Other names for the organizational stage are scientific management (Taylor), rational (Ellström), system building (Beer), and differentiation (Lievegoed). The second stage is a reaction to the unstructured one-man organization, which depends totally on him or her. The characteristics for the organized unit are therefore: organizational structures, either technically, juridically or economically designed, rules of behavior, goals and an organizational spirit with values, scientific management, stability, and productivity. Every kind of activity requires a specialist.

The system is more important than the individual member. The big freedom of the pioneer is dispersed to the members of the organization. Everybody gets an action space, in which the manager or worker is self-responsible (Harzburger Model). The domination under the pioneer is replaced by a certain equality among the employees.

The peripheral problem is nearly unsolvable and the centrifugal forces are strong. To counter these problems, structural (not human) binding is employed and a tendency to bureaucracy can be noticed.

The term 'rational' also illuminates characteristics of the organizational system. An organization is a "purposefully designed instrument (means) for the pursuit of the goals" (Ellström, p. 232), fixed by either the members of the organization itself (mostly top management) or by the board of trustees, or the representatives of the public or private holders of the university.

The administration of the universities, especially in the U.S.A., are structured under the principles of the organizational stage, e.g. the matrix organization as proposed by Bess. I think this is a copy of the presidential system and of business administration. In Switzerland the administration is still weak, more serving than dominating. The reason is the still accepted model of the Humboldtian university with its claim of freedom for all. There may also be a political reason: The federal council knows only a primus inter pares.

When the administration takes over the leadership, then the freedom of the researchers and teachers is limited. One of the jobs of a professor is serving the university and other units. I think also the administration should be called "serving unit" and has to serve the university. Servicing means improving relationships first by relating the different parts of a university both to each other and to their surroundings. The taxpayer, the private or public holder of the university, needs information, and the college itself must be informed about the political surroundings to make coherent decisions. Second, servicing means supporting the searching and teaching activities. Third, the administration serves the university by establishing an accounting system, a budget system, a planning system, a recording system, etc.

The general quality for serving is equality. All members should be treated in the same way, have the same chances. But equality is a wonderful moral principle that gives not enough space for individuality. So, tolerance must reign to avoid bureaucracy. We see that equality is not as easy to realize as freedom in the pioneer stage. Most problems of serving in a university are still not yet solved. I suppose that only a step into the third stage can help.

The integration stage

The integrating organization is the synthesis of the polarity of the pioneering-organization stage or the freedom-binding in equality. The synthesis introduces a new dimension or quality. It is human love. I understand love as the capability of accepting, supporting and developing differences between related people and parts of an organization.

Love means integration of the whole person in a process, taking the risk of change, meeting the truth and contacting other people in such a way that these don't lose their autonomy, but rather gain even more autonomy (or, in other words, more responsibility, more rationality, more freedom). Love is for us a mystic phenomenon, but a part of it is learnable and parts are even operational. To communicate with interest, sympathy, realism, and understanding (Rogers) can be learned, affection to other people can be measured (Stokes).

The connection of the members to the organization is realized in the pioneering stage by the charisma or authority of the pioneer, in the organizational stage by job descriptions, information rules and committees, by accepting and realizing the spirit of the unit, by reward and punishment, or by management education, which encourages the same awareness and problem-solving techniques, the same values and a similar way of thinking and feeling.

Love is the connection in the third stage, it links person to person and not person to organization. This is accepted as a common task which allows the working or researching, teaching and serving life of the co-workers. It is rather superfluous to say that this stage is a utopian one, but it is a dream, and a hope for many members of the young generation of academics. And many characteristics of the third stage are discussed and sometimes even realized, as, e.g, the linking pins (Likert), Theory Z (Ouchi, Nichols), concerned people defining their goals (Odiorne), and policies (MbO), organizational development (this means that structures are changing from time to time), improving relationships (Argyris, Berne, Blake and Mouton, Gordon, Rogers, etc.), the holistic approach and the knowledge that every system is in connection with other systems (Churchman), that conflicts are solvable and that members evaluate themselves and define the organization.

All three principles are in the process of realization. Freedom is reigning because the membership, the principles followed, the kind of job, the readiness for developing, are the results of free and rational choices. The possibility of self-realization and self-finding is constitutional to the third stage, as well as a part of the autonomy process. Equality is fulfilled because everybody has chances for changing, for self-realization, self-finding, and has access to the full amount of information. Love still has to be learned in entering the third stage of development. It is the base for the unfolding of freedom and equality among the academic units.

I think that the teaching process should be organized after the principles of the third stage. Students (and teachers) should have the possibility of developing their personalities, but also of learning to be active members of an organization, of the teaching and learning community.

Conclusions

The learning goals of the actual universities swing between the scientific and the professional areas. Both areas normally underly the second stage, the rational mode. The pressure from public opinion, from scientific management, from students for professional and scientific knowledge and capabilities is high and goes in the direction of the second level. The viewpoint, aims and methods of the natural sciences are still dominating. They use scientific methods to discover phenomena of nature, to control, to influence, and even to exploit them. Explanation and forecasting are necessary tools for the natural sciences and are also introduced in teaching activities.

I have chosen the viewpoint that the human being is destined for freedom, autonomy in a social environment. Therefore, no explanation, forecasting, controlling, or leading is permitted in the area of the human being. The concerned people, the students, and teachers, are learning to decide together about the learning objectives and methods of learning, about the procedures for research and evaluation. Feyerabend consequently proposes both that universities should belong to industry (without freedom) and a "supermarket of ideas". "Education, until now a process which people are subjected to, becomes in this way a process which people plan themselves." (Feyerabend, p. 68.)

The so-called reality is limiting our possibilities to act in the way we think is the best. But to understand our own situation and the position of the organization instead of explaining and forecasting in order to control them can orient us as to who we are, from where we are coming and how to decide about the future. Metaphors are a support for understanding. I hope the metaphors of the three development stages of an organization give this understanding.

REFERENCES

Argyris, Chris, *Integrating the Individual and the Organization*. John Wiley and Sons, Inc., New York, 1954.

Beer, Stafford, *Kybernetik und Management*. S. Fischer Verlag, Hamburg, 1967.

Berne, E., *Principles of Group Treatment*. Oxford University Press, New York, 1966.

Bess, James L., *University Organization*. Human Sciences Press, Inc., New York, 1982.

Blake, Robert R., Mouton, Jane S., *Grid Organization Development*. Gulf Publishing Co., Houston, 1968.

Churchman, C. West, *Einführung in die Systemanalyse*. Buchklub Ex Libris, Zürich, 1974.

Ellström, Per-Erik, "Four Faces of Educational Organization". *Higher Education*, April, 1983, Vol. 12, No. 2, p. 231.

Feyerabend, Paul, "Das Märchen Wissenschaft". *Kursbuch 53 Utopien*, Rotbuch Verlag, Berlin, 1978.

Gordon, Thomas, *Group Centered Leadership - A Way of Releasing the Creative Potential of Groups*. Boston, 1955.

Höhn, Reinhard, *Führungsbrevier der Wirtschaft*. Bd. 6, Menschenführung und Betriebsorganisation.

Lievegoed, B.C.J., *Organisationen im Wandel*. Buchklub Ex Libris, Zürich, 1976.

Likert, Rensis, *The Human Organization*. McGraw Hill Book Co., 1967.

Nichols, David A., "Can 'Theory Z' Be Applied to Academic Management?". *The Chronicle of Higher Education*, Sept. 1, 1982, p. 72.

Odiorne, G. S., *Management by Objectives - A System of Management Leadership*. Pitman Publishing Corp., New York, 1965.

References cont.

Ouchi, William G., Theory Z - How American Business Can Meet the Japanese Challenge. Avon Books, New York, 1982.

Rogers, Carl R., La Développement de la Personne. Dunod, Paris, 1967.

Ruegg, Walter, Die Strukturreform der Humboldtschen Universität. Berner Universitätsschriften, Verlag Paul Haupt, Bern, 1969, Heft 17.

Stokes, John Powell, "Components of Group Cohesion". Small Group Behavior, May 1983, Vol. 14, No. 2, p. 163.

Taylor, Frederick W., Die Grundsätze wissen schaftlicher Betriebsführung. Beltz Verlag, Basel, 1977.

NOTHING SUCCEEDS LIKE SUCCESS

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Reference has already been made to the changing context of research on student learning (1). An early tradition, which still exists, has been restricted to the identification of various attributes by which students can be differentiated. Correlation studies have been used to ascertain which of these may be associated with success and failure. This has been described as the 'dimensional approach' (2).

There are several difficulties with this approach, of which three will be cited here. Firstly, successful students usually have *some* of the indicators of success, but rarely all of them. Secondly, there is an assumption in correlation studies that there is a linear relationship between a given factor and study success. Thirdly, the factors determining success and failure which are considered to be worthy of attention are assumed to be located in the student rather than in the teaching or institutional environment.

These difficulties have been treated in different ways, as exemplified by the diversity of methods represented in this seminar. Firstly, many researchers have turned to cluster analysis instead of separate dimensions, whereby a variety of patterns rather than a single attribute are associated with success and failure (3). Secondly, attempts to classify institutions and 'match' them with student subgroups have taken into account the importance of environmental factors. Thirdly, the non-linear relationship between student factors and success has been investigated through analysis of variance rather than correlation techniques in aptitude-treatment interaction studies. Pairs of opposed teaching/learning modes have been identified which, although producing no overall differences in study success, are found to be differentially debilitating and facilitating for students with attributes dimensionally opposed to each other.

Educational research is essentially applied research. The early emphasis on student attributes was directed to the identification of predictors which could improve the efficiency of student selection. These have proved to be elusive. Increased student demand led to expansion, and its subsequent falling off has brought about competition among institutions to attract students. Economic rigour has increased the need for accountability. Greater responsibility for the success of non-traditional students has led to a readiness to build in support for students at risk or in difficulty, and a willingness to diversify teaching methods and assignments so that individual students are more likely to have their particular needs met.

While traditional investigations of factors associated with student success could not defensibly be used as a basis for selection procedures, they do give a lead in indicating which students may be considered to be at risk, and what ought to be done to help them. Individual characteristics can be divided into those which are known before students enter university, and those which can only become known while they are there. The successful student has been summarised by the acronym WASPYSSM; white anglo-saxon protestant young middle class male. Such a profile dominates in traditional universities; in 'universities of the second chance' that is not the case, and the necessity of support services, counselling and academic advice is recognized.

Many non-traditional students who might be considered to have difficulties to overcome achieve better than might be expected as a result of their particularly clear goals and high motivation; for research on attributes associated with success indicate that motivation, clear goals and self-esteem are of overriding importance. Since these factors are clearly learned, or, having been lost, can receive remedial treatment, it is evident that a first level of apporach in the improvement of student success is to implement policies and procedures which will maintain these at a high level. These attributes differ from factors such as study methods and amount of time invested on the one hand, and personality charateristics on the other. While many investigators cite good study methods, and some stress time invested as the most important factor in study success, it is important to differentiate between symptoms and causes. Time may be inappropriately spent, and overlong hours are regarded by some researchers as obsessive (4). What seems to be the case is that, where motivation is high and goals are clear, study methods and time spent of themselves become appropriate. Hence the assertion by Gibbs that courses in study methods must always take place in the context of the study where problems are being encountered (5). Insofar as personality characteristics are concerned, there is evidence enough that certain studies and modes of teaching and learning seem to favour some personalities at the expense of others. But such differences are usually quite small, and usually affect those with extreme scores. The most that can be expected from university departments or individual teachers is that they incorporate a mix of methods, some didactic, some problem solving: some group, some individual; so that all students in their turn learn to cope with the uncongenial as well as be favoured by more congenial approaches. It is conceivable that educational technology will at some time make entirely individualized approaches feasible; but, even when that time is at hand, it must be remembered that such individualization is a second level of approach in the improvement of study success. There are several important aspects of good university teaching will raise the levels of performance of *all* students, and these require prior attention before the fine differences of individual needs are attended to. This paper indicates that these might be, and gives examples of their successful implementation.

The importance of a tradition of success

That rates of success and failure of different universities, and of different departments within them, remain constant over many years and differ from each other in a quite arbitrary way is well known. Some would defend this situation on the grounds that institutions pre-select their students according to their image. On the other hand, the greater the prestige of a department or institution, the greater is the realisation among students of the status that it can confer. Also, the atmosphere in an institution where most students can expect to succeed is quite different from one in which many fail. A combination of prestigious standards and an expectation of success will contribute to high motivation. Students with mediocre scores on measures of pre-university attainment have been found to do better in highly-selective institutions than in less prestigious colleges with higher attrition rates (6).

The importance of success in the first trimester

A survey of a large number of studies has shown that a highly significant relation between attrition and early college grades (7). One interpretation in the American context is that good grades are good reinforcers which maintain a student's academic performance and decrease the chances of dropping out. In the Netherlands, where examinations can be postponed or retaken, these can lead to an overburdening which a first year student in particular finds difficult to cope with.

The case study selected to illustrate this point is Van Os' study of students in the first year course in 1972-1973 in the economic faculty of the Vrije Universiteit, Amsterdam (8). Typically for such a course, students had eight examinations to take in the course of the year. Resits were arranged, and students were expected to pass with an average of 6 out of 10 points on all papers by December 1973. Four examinations were set for the first time in January 1973. A preliminary division of students was made on the basis of these examinations, and the students were divided into four groups, according to whether they had passed in two or more examinations in January or not; and whether they had also passed or failed the first year course. The contingency table so obtained was as follows.

January examination

		Pass <2	Pass >2
First Year Course	Pass	Group 4 n=90	Group 3 n=18
	Fail	Group 2 n=19	Group 1 n=75
	Total	n=109	n=93

Table 1: January versus First Year Result, Economics Department Vrije Universiteit Amsterdam, 1973 (8)

Of the 93 students with less than 2 passes in January, 75 failed the first year course. Of the 109 who gained two or more passes in January, 90 passed the first year course.

The four groups were compared on three aspects of their study; their participation in examinations, their results, and their study time. The analysis indicated that the students who failed to cope with the backlog of work caused by poor results in the January examinations were not guilty of failing to spend time on their studies, either before January or after it. There is a possibility that their time and effort were inefficiently utilised.

The conclusions of the study were that the January examinations were most decisive in determining success in the year as a whole. Previous education played a role in this, since the students with an arts biased school leaving certificate came predominantly in the group that attained at most one pass in January. They had particular difficulty with the mathematics examination. But those arts based students who were successful in the mathematics examination were as successful in the year as a whole as those with a science/mathematics based school leaving diploma.

The importance of guidance and counselling for students at risk

One wonders what the effect would have been of considering the students with a weaker mathematics background in the previous case study to have been at risk, and of providing them with additional support to help them cope with their mathematics course. In this instance, the students were disadvantaged in just one aspect. It is instructive to learn of the work of the 'Bridging the Gap Unit' at the University of Haifa, where students are helped to success in spite of many disadvantaging factors. The University of Haifa is located on Mount Carmel, and serves the one million people of Northern Israel. It is an area of developing towns, border settlements, kibbutzim, and Druze and Arab villages; many of the population are sephardim, Jews of eastern origin. Even though they now make up more than half the population, only one sixth of university students come from this group. Poor socio-economic conditions make it difficult to improve social and economic standing. In order to break the vicious circle, the University of Haifa created this special service centre, which assists talented men and women from underprivileged areas to attain a university education through innovative programmes combining recruitment, scholarships counselling and guidance. One major programme focuses on community leaders. Arrangements are made which include scholarships, tutorials and academic counselling which enable these leaders to study while continuing their work in their communities. The dropout rate of these students is 5% against the university's average of 30%. Such a figure is a remarkable achievement when it is considered that these students have so many of the so-called unfavourable characteristics, in that they are older, live at a distance, have work and family commitments, some ethnic disadvantage and come from a background where there is little tradition of higher education. It may be said that such extraordinary achievements are the result of extraordinary motivation; their loss of face in their communities had they failed would have been very great. But it is difficult to imagine that they could have succeeded without the special guidance and counselling programme. This helped them decide which courses to study, how many to take at at time, how to study them, how to balance university and other commitments, and so forth. An important element of the counsellor's task is to develop and maintain self esteem. There are similar programmes for young people who have shown leadership. Neither can these achievements be dismissed as the results of pioneer spirit, since they have been maintained and have even been improved over a number of years. Recently, the Director of the Unit wrote:

'About 30% to 33% of students fail to complete their studies at the University of Haifa, while students at the Bridging the Gap Unit complete them almost without exception. Of a special group of 100 students on one of last year's programmes, only one student failed to continue with his studies. In another programme, not a single student out of 40 in their first year dropped out of the course. Over the 700 to 750 students connected with the different programmes, the dropout rate of 5% is certainly not exceeded. Of the 12 students who were awarded Certificates of Distinction at the end of the last term among the 600 students of the Universtiy, four were students of the Unit for Bridging the Gap. Of the 550 Bridging the Gap students taking examinations, 100 obtained an average mark of over 80%.' (9)

The importance of teaching students to lead an academic discourse

Raaheim argues that there are two types of difficulties facing students when they first come to university; problems related to 'academic freedom', and problems of learning to lead an 'academic discourse'. His research project, briefly reported here, was carried out between 1976 and 1979 within the first year course leading to the 'Examen Philosophicum' at the University of Bergen. It demonstrated how both of these problems may be investigated and ameliorated. (10)

The first experiment he reports shows how a lecturer can create a situation where students willingly attend optional lectures, and so are helped to develop the self discipline required to cope with 'academic freedom'. While this is important, it is not enough to enable students to operate at the level required of them in an 'academic discourse'. Raaheim shows how students are diligent enough and able to obtain good marks in tasks involving factual knowledge from the beginning of their studies. Such tasks are familiar to all of them from school. They are less uniformly successful in tasks demanding an integration of information to be used in the discussion of a difficult problem. As a result, many of them are dismissed by their teachers as 'not fitted for the demands of academic discourse'. Raaheim indicates that it is rather that they are not familiar with the demands of academic discourse. In the final stage of the research project, the following strategy was chosen. Students in the experimental group were given a test examination. They were informed one week beforehand what the question would be, and they were given an extra lecture on the topic with instructions to integrate the material with textbooks. Since previous examinations had shown that combining information from different parts of the syllabus was particularly difficult, the question to be answered was:

> 'Describe the effects of motivational factors on perception, learning and thinking.'

An average of 2.4 (a very good mark) with 62% of the students obtaining a distinction was obtained, as one might expect on such a prepared exercise. But importantly, the effects were transferred to the official examination held a few weeks later. Here, the questions were not known beforehand, and were drawn from the whole syllabus. Nevertheless, the experimental group scored on average 2.64 (a good mark, but somewhat inferior to the earlier 2.4) and 30% gained a distinction. The marks in another subject, logic, were used for selecting a matched control group. The performances of the two groups may be compared on Table 2. The difference between the experimental and the control group were significant at the $p < .01$ level.

		Logic		Psychology	
	N	Mark	Laud	Mark	Laud
Experimental group	36	2.87	28%	2.64	39%
Control group	36	2.87	28%	2.91	22%

Table 2: Results of the Official Examination (10)

The effect was achieved by very simple means; a few words to the students on how to prepare for examinations, an additional lecture and one 90 minute session of writing an essay at the 'test examination'.

The lesson to be learned from these results is not just the benefit of having students prepare for examinations by exercises such as those described. It is also the advantage of letting students know what exactly is expected of them in the final examination. Uncertainty and the ensuing nervousness of the orthodox system consitute an unreal intellectual hurdle, and one which it is not difficult to remove.

The importance of timely remedial help

Most universities have their individualised guidance and counselling services; but it is evident that some are markedly more successful and appreciated than others. The example considered above, the 'Bridging the Gap Unit' at the University of Haifa, takes students who might be at risk and ensures that they receive the support needed to build up their self esteem and the study strategies until they can operate safely alone. A second example which will be cited here is the work of Wankowski at the University of Birmingham. Unlike the 'Bridging the Gap' situation, students seeking help at the Birmingham Unit are traditional students entering University by having demonstrated their learning competence at school. Somehow many of them come to lose that learning competency and the task of Wankowski's unit is to restore it. Wankowski's work is well known and will not be described here, except to indicate the common feature it has with the Haifa Unit, and indeed many other successful units, in that there is a characteristic unity made of personal and academic counselling. Another important feature is the essential mutuality of the teaching/learning situation. A student is frequently set the task of explaining a difficult topic to a layman, the counsellor. Together, student and counsellor make conceptual maps.

To be a partner in such an endeavour, and to act as the student while a troublesome part of the curriculum is expounded whatever the subject specialism of the client might be is no mean task, and will daunt many. If integrated personal and academic counselling is to be achieved, it needs to be tried. The alternative is to have decentralised services in subject departments, where the counsellor will have only to operate in one subject area; but the very lack of association which many students value in a centralised service will then be lost.

In a recent evaluation of the unit, Wankowski has shown how a student's chances of recovery have been found to depend on the time of the year in which help is first sought. Since the critical examination time is the summer term, it is to be expected that students coming in the first or second trimester for help have more chance to learn, experiment with and adopt new learning strategies than those who come when the examinations are almost upon them. But, as will be seen below, that is not to say that a late appeal is one without hope.

At the time of the analysis was undertaken, the students who had attended the unit in the years 1975 to 1978 could be classified as follows:

Graduated	132	48%
Current student	69	25%
Withdrew	72	26%
No information/ casual student	3	1%
	276	100%

Table 3: The Fate of the Students Who Came for Help (11)

The 'rescue rate' was calculated in two different ways. The 'most conservative estimate' is to consider the proportion of students who have actually graduated and exclude the current students. On this basis the rescue rate is 133:205, or 65%. Alternatively, 'current students' can also be considered to have recovered their will or ability to study. When the rescue rate is taken to be the graduates plus the current students in relation to the total group counselled then it becomes 202:277, or 73%.

When current students are excluded it is found that nearly 3 out of 4 students coming for help in the first or second trimester of the year graduated successfully, and about 1 in 2 of those who came in the summer term. When current students are included, 4 out of 5 were successful if they came in the first or second trimester; if they came in the summer term, then 3 out of every 5 were successful.

Conclusions to be drawn

It is difficult to draw justified conclusions from a few sets of figures from a few case studies, however striking these might be. But it seems worthy of note that these studies in universities in England, Norway, Israel and the Netherlands have a similar message. Early failure can have disastrous results; but students with initial deficiencies who nevertheless encounter early success can exceed above their expectations. Students cannot succeed however if they do not know what is expected of them or have models of the tasks they are to perform and adequate feedback on their achievements. Clear goals, high motivation and self esteem are the most important factors associated with study success. When they are lost, learning competence will be lost, and it cannot be restored without them.

Statements such as these are not new. They can be found in the literature of twenty years ago. It is to be regretted that the case studies described should still seem to be out of the ordinary, and that we still have to await the implementation of the principles which they incorporate on a general basis.

When that is indeed the case, then the most readily achievable improvements in the efficiency of higher education will have been attained. There will then be opportunity for the application of techniques from the second line of approach, so that, over and above the elevation of the standards of all students, individual differences in learning styles and personal preferences in teaching/learning modes can be attended to.

References:

1. Hawkins, C.A. (1983) *The relative importance of the social and individual dimensions of the teaching and learning situation: a synthesis of two decades of research* Paper presented at IUT conference, Dublin, July 1983
2. Torgerson, W.S. (1965) Multidimensional representation of similarity structures. In Katz, M.M., Cole, J.O. and Barton, W.E. *The role and methodology of classification in psychiatry and psychopathology* U.S. Dept of Health, Education and Welfare, Washington.
3. Everitt, B. (1974) *Cluster Analysis* Heinemann, London
4. Ryle, A. (1969) *Student Casualties* Penguin, Harmondsworth
5. Gibbs, G. (1980) *Helping students to develop as learners* Open University, Institute of Educational Technology, Milton Keynes

6. Pantages, T.J. and Creedon, C.F. (1975) Studies of College Attrition 1950-1985 Review of Educational Research Vol. 48, No.1, pp49-101

7. Summerskill, J. (1962) Dropouts from College In N. Sanford (ed.) The American College Wiley, New York.

8. Van Os, W. (1978) Vallen en Opstaan Vrije Universiteit, Amsterdam

9. Adler, A. (1983) Brochure of the Bridging the Gap Unit, and Personal Communication. University of Haifa, Israel.

10. Raaheim, K. and Wankowski, J.A. (1981) Helping Students to Learn at University Sigma Forlag, Bergen, Norway.

11. Wankowski, J.A. (1983) How students view the help given to them by the study assistance unit at one university Educational Counselling Unit, University of Birmingham

A fuller treatment of these and other case studies can be found in the report from which this article is drawn, namely: Skimming the Milk and Whipping the Cream C. Anne Hawkins, Department of Research and Development in Higher Education, Rijksuniversiteit Utrecht, The Netherlands.

MOTIVATION, SELF-ESTEEM AND ACHIEVEMENT AT UNIVERSITY

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1. INTRODUCTION

Recent research on student learning in higher education shows a renewed interest in learning styles and strategies. Most researchers in this field have a phenomenological point of view : they start from the perceptions and experiences of the students. Therefore, indepth interviews or more structured inventories are prefered to experimental manipulations. Within these subjective perceptions and experiences, qualitative differences in the approaches and learning styles of the students are explored.

By studying a text, MARTON & SALJO (1976) found differences between deep and surface approach to learning. PASK (1976) explored two contrasting styles of learning for understanding : serialism and holism. Other reseachers tried to validate these interview-results by questionnaires, in which new insights of qualitative differences in learning were added. The Lancaster inventory of ENTWISTLE et al (1981) and the questionnaire by BIGGS (1979) are two recent examples.

Our research focuses mainly on social and affective factors of achievement at university. By this, we do not neglect differences in learning styles and approaches, but we also consider more affective elements, such as achievement motivation, self-esteem, evaluation of performances, expectancies of succes, etc... Basicly, our method is a combination of the two procedures cited above : we start with semi-structured interviews with each student, and then we give an inventory to both the interviewer and the student. For two pilotstudies we built some new interview scales out of the interview material (VAN OVERWALLE 1982, 1983), and used them as a part of the inventory in our recent research on a larger sample.

Our recent results confirm what we had already found in our pilotstudies : the best predictors of studysucces at university are academic self-esteem of own ability and probability of succes. These central predictors are followed on the one side by motivation and involvement in study activities, and on the other side by evaluation of own performances during the courses at university. In this paper, we will try to explain these results within a theory of human motivation, and in our conclusion we will give some suggestions for improvement of motivation and academic self-esteem.

2. METHOD

Sample

Of a random sample of 324 first-year students of all departements at our university

- 240 (74%) students were interviewed for the first time after the first half-year (march)
- 184 (57%) students were contacted for the second time after all the examination sessions (november)

The rather high mortality of our sample is due to the fact that for each student an appointment for an interview session of 1 hour had to be arranged. Many students never appeared, even after a 3th engagement. The 240 students of the first interview have nevertheless the same distribution on the achievement-criterion as the 324 originals. Unfortunately, most students who dropped out and never appeared for the second interview were those who failed their first year. Since most of them left university, it was very difficult to make an appointment for a second interview.

Inventory

After the interview, the interviewer and the student completed an inventory which was similar for both in many aspects. It contained

1. interviewscales (constructed during the pilotstudies cf. VAN OVERWALLE 1982, 1983)
2. global ratings (developed after a review of relevant literature by WELLENS 1979)
3. (students only) questionnaires (1982-versions) of THEYSSENS (1982) and ENTWISTLE (1979)

4. (interviewers only) observation of verbal performance of the student during the interview

Statistical analysis

The statistical procedures are similar to those of both pilotstudies. More details are outlined in VAN OVERWALLE (1983, p. 352-353).

3. RESULTS

The main results are summarized in figures 1 and 2. For understanding them, it is enough to know that the closer the variables are to the centre of the figure, the higher their correlations are with first-year achievement. So the circles in the figures make a distinction between central (=high) medial and peripheral (=low) predictors. The variables included in this analysis, are selected on the correlation with achievement which is at least significant up to .005 (which corresponds to a correlation of ± .20).

Academic Self-esteem

Except from partial examination results in the first half-year, academic self-esteem of own ability as a student and probability of succes at examinations, plays a central role in predicting student achievement. The centrality of academic self-esteem in predicting achievement is a stable feature. It is manifested before examinations as well as during examinations, in this study as well as in our previous pilotstudies. In his review of similar research on several national samples, BLOOM (1976) also consideres academic self-concept as the most predictive affective entry characteristic.

Other important predictors of studentresults lie arround this central predictor. These medial predictors fall apart in two groups (1) evaluation of own ability and (2) motivation and involvement in study-activities. We will briefly mention some characteristics of both groups.

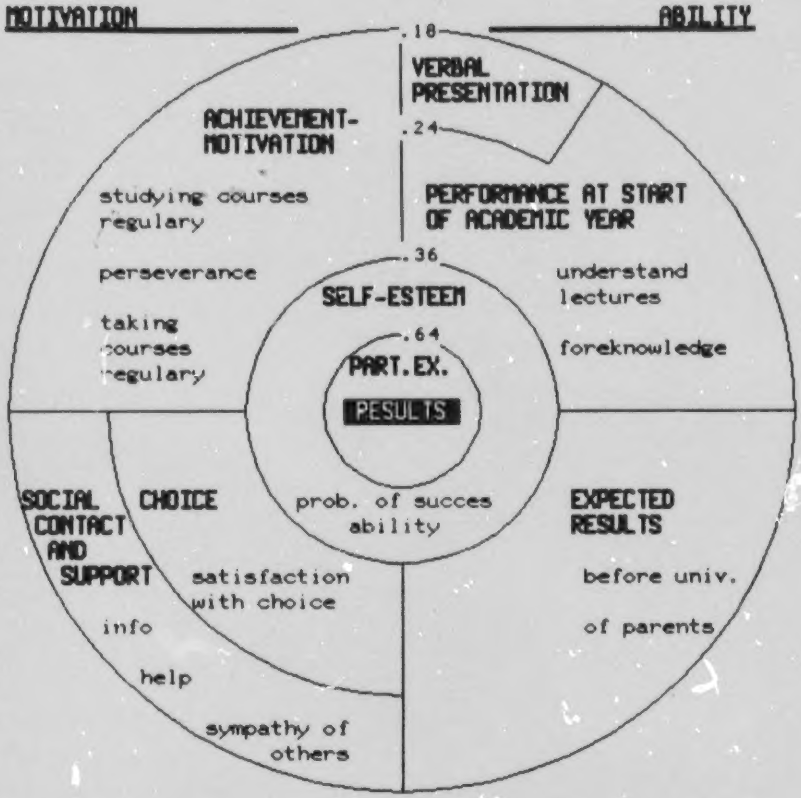
MOTIVATION
ABILITY
.18
VERBAL PRESENTATION
.24
ACHIEVEMENT-MOTIVATION
studying courses regulary
perseverance
taking courses regulary
PERFORMANCE AT START OF ACADEMIC YEAR
understand lectures
foreknowledge
.36
SELF-ESTEEM
.64
PART.EX.
RESULTS
SOCIAL CONTACT AND SUPPORT
info
help
sympathy of others
CHOICE
satisfaction with choice
prob. of succes
ability
EXPECTED RESULTS
before univ.
of parents

FIGURE 1 : CONCEPTUAL REPRESENTATION OF A MULTIDIMENSIONAL SCALING OF PREDICTORS BEFORE THE EXAMINATIONS AND FINAL EXAMINATION - RESULTS BASED ON SPEARMAN CORRELATIONS n = 240

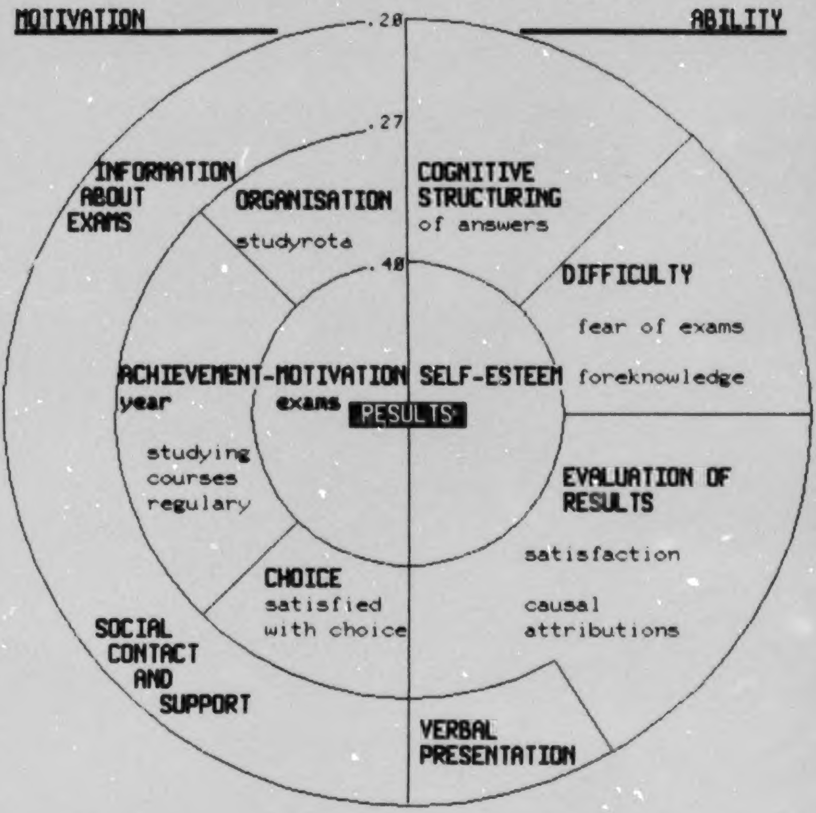
MOTIVATION
ABILITY
.20
.27
.40
INFORMATION ABOUT EXAMS
ORGANISATION
studyrota
COGNITIVE STRUCTURING
of answers
DIFFICULTY
fear of exams
foreknowledge
ACHIEVEMENT-MOTIVATION
year
exams
SELF-ESTEEM
RESULTS
studying courses regulary
EVALUATION OF RESULTS
satisfaction
causal attributions
CHOICE
satisfied with choice
SOCIAL CONTACT AND SUPPORT
VERBAL PRESENTATION

FIGURE 2 : CONCEPTUAL REPRESENTATION OF A MULTIDIMENSIONAL SCALING OF PREDICTORS DURING EXAMINATIONS AND FINAL EXAMINATIONRESULTS BASED ON SPEARMAN CORRELATIONS n = 184

Evaluation of own ability

consists of expectation of results before entering university and evaluation of the results after the examinations. In the latter the student seeks reasons for his succes or failure, and attributes them to external or internal events. Performance during the courses at the beginning of the academic year, and an evaluation of the cognitive level of own answers at examinations are also important. The latter questions about the cognitive level derive from the SOLO-taxonomy of BIGGS (1979). This study confirms our previous results in this matter : relational answers (in which students can relate the diffent topics of the problem) lead to better results than any other level in the cognitive taxonomy of BIGGS.

Motivation and involvement

consist of taking courses regulary and regular and well-organised study. Also important is the degree of satisfaction with studychoice. Predictive social factors are related to support, information and help from others in study-matters. All these predictors were also found in our pilotstudies.

What we did not find in our analysis were items on student approaches to learning or items about intrinsic motivation. Our research, in which we used the Lancaster inventory of ENTWISTLE, doesn't necessarily disconfirm ENTWISTLE's previous results, because he related approaches to learning only with academic self-concept, and not with final examination results. With the similar questionnaire of BIGGS (1979), WATKINS & HATTIE (1981) found non-significant to moderate correlations with academic achievement. Important differences between faculties suggest that the concepts and approaches of study may differ in different contexts, such as different subject areas. However, a replication of this study on larger samples is necessary for a final conclusion on faculty differences.

In spite of recent findings in research on student learning, and in spite of the desired qualities of intrinsic motivation in learning, those topics seem to be trivial in the context of our university. How can this be explained ?

4. DISCUSSION

In this section, we will try to bring our results into a more general framework of human motivation. We think that as in the classical theorie of ATKINSON & RAYNOR (1974), it is impossible to reduce human behaviour and achievement motivation in a few formula's. Even the new theorie of the dynamics of achievement-behaviour (ATKINSON & BIRCH 1978) lacks the essential aspect of goal-setting in human behaviour. For a better understanding of human motivation one needs to consider both the goal one is striving for, and the more specific means or behaviours that can lead to this desired goal (NUTTIN 1981, ECKBLAD 1981).

In figure 3, which was basically inspired by the scheme theory of ECKBLAD (1981), we summarise the main characteristics of a cognitive approach of motivation. In this example, means correspond to several paths leading to similar/different ends or goals. In his attempt to succeed at university (=goal), the student has to select different study activities (=means) out of many other possible (leisure or work) activities at university.

Before explaining our results, we distinguish between two main types of questions in our inventories. These different types of questions focus the student's attention on different events, and hence give rise to data which can be devided in two basic types : activities (=means) and evaluation (=choice and goal).

(1) Activity-questions focus on the activity itself, and the different approaches that are possible in behaving and completing the activity. Since different approaches to study are possible and/or optimal (depending on the person and the requirements of the task) answers to such questions will not enter in our analysis which is fundamentally based on correlations. That's why items describing the study proces itself fall beyond correlations with student achievement.

(2) Evaluation-questions focus on a broader framework : the choices of study activities in the past, self-esteem and evaluation of course matter now, probability of succes in the future. Since such questions are about past choices and future outcomes of study, they can be detected by

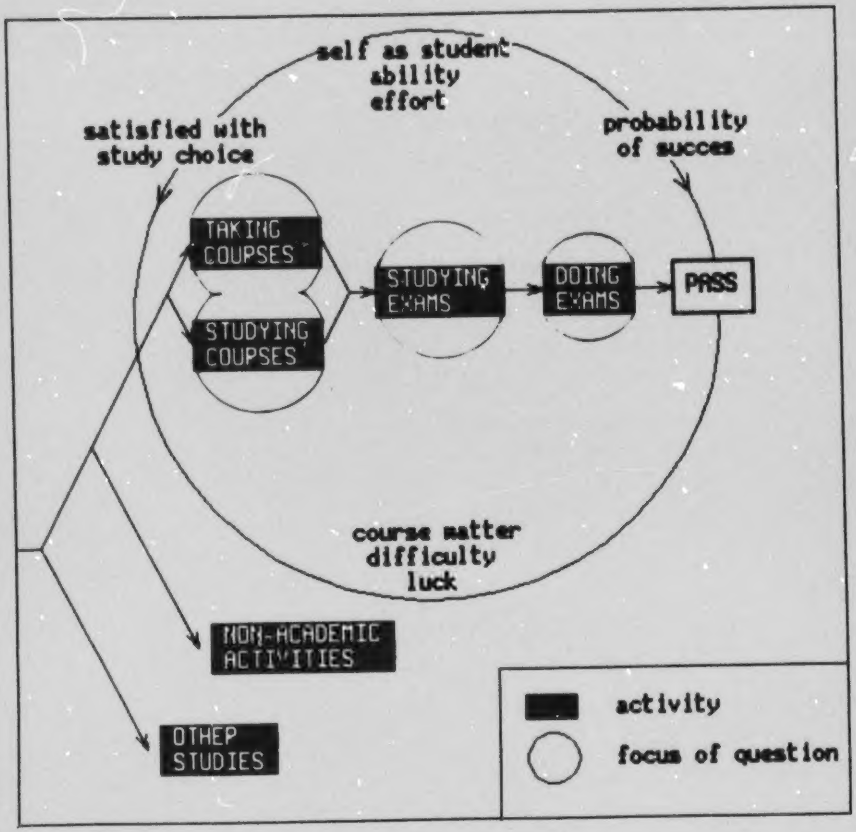
self as student
ability
effort
satisfied with
study choice
probability
of succes
TAKING
COURSES
STUDYING
COURSES
STUDYING
EXAMS
DOING
EXAMS
PASS
course matter
difficulty
luck
NON-ACADEMIC
ACTIVITIES
OTHER
STUDIES
activity
focus of question

FIGURE 3 : CONCEPTUAL COGNITIVE - MOTIVATIONAL FRAMEWORK OF THE STUDYACTIVITIES LEADING TO STUDYACHIEVEMENT, AND LARGE / SMALL FOCUS OF ATTENTION ELICITED BY EVALUATION / ACTIVITY DIRECTED QUESTIONS

correlation techniques. Perhaps the stress on regularity and organisation of studyactivities is partly due to the attempts of the student to persevere in studying and to avoide other distracting activities.

Through such a model one can intuitively understand why choice of past study activities and evaluation of present ability will direct and influence future behaviour and outcome at university. Though the general framework is present, we don't know yet in detail how this evaluative process motivates future behaviour, or how it can be changed to improve studysucces.

This general motivation model can also explain why intrinsic motivation must not be the most optimal state of a learner. Since studying in the long-term always implies doing and learning things we don't like, the dominant characteristic of a student perhaps should be his motivation to overcome such barriers, instead of only studying the course matter he likes. One of the most important conditions in this respect is a feeling of personal causation in selecting and succesfully completing study-activities. Personal causation and determination is a keystone in some recent theories of motivation (DECI 1975, DECI & RYAN 1980, NUTTIN 1981) and seems to be the most effective factor in enhancing motivation at school (DE CHARMS 1976, 1981). According to DE CHARMS, a student who perceives personal causation can translate his goals into realistic activities as meaningfull steps toward his goal.

5. CONCLUSION

From a behavioristic inspired point of view, one could conclude that this study was unable to detect the relevant behaviours or learning approaches leading to succes at university. Such a conclusion would neglect the importance of motivation and self-esteem in directing and regulating future behaviour toward the desired goal. Since academic self-esteem is the dominant predictor of study-succes in our and other studies (eg. BLOOM 1976), one wonders why until now this affective factor received so little attention in educational research.

Recent developments in research on attribution of succes and failure (eg. WEINER 1974, FRIEZE 1976) and social comparison of ability (GOETHALS & DARLEY 1977, DARLEY & GOETHALS 1980) can now explain in more detail how self-evaluation of own ability and effort is built up.

However, we do not know yet how a realistic self-concept can be developed and enhanced, neither we know much about the processes by which evaluation of own ability, effort and studysucces will influence the final studyresults. But we take this problem serious enough as a challenge for future research. Because not only perception and experiences of how students approach learning tasks, but also the subjective perception of themselves in a educational setting seems essential for a better understanding of student learning.

6. REFERENCES

ATKINSON, J.W. & BIRCH, D. (1978) An indroduction to motivation. (2nd ed.) Van Nostrand, New-York.

ATKINSON, J.W. & RAYNOR, J.O. (1974) Motivation and Achievement. Wachington.

BLOOM, B.S. (1976) Human characteristics and school learning. Mc Graw-Hill, New-York.

BIGGS, J. (1979) Individual differences in study processes and the quality of learning outcomes. Higher Education, 8, 381-394.

DARLEY, J.M. & GOETHALS, G.R. (1980) People's analysis of the causes of ability-linking performances. in : BERKOWITS (ed.) Advances in experimental social psychology, vol 13. New-York, Academic Press.

DE CHARMS, R. (1976) Enchancing Motivation : change in the classroom. New-York, Irvington.

DE CHARMS, R. (1981) Personal causation and locus of control : two different traditions and two uncorrelated measures. in : LEFCOURT, H.M. (ed.) Research with the locus of control construct. Academic Press, New-York.

DECI, E.L. (1975) Intrinsic Motivation. Plenum, New-York.

DECI, E.L. & RYAN, R.M. (1980) The empirical exploration of intrinsic motivational processes. in : BERKOWITS (ed.) Advances in experimental social psychology, vol 13. New-York, Academic Press.

ECKBLAD, G. (1981) Scheme theory. A conceptual framework for cognitive-motivational processes. Academic Press, London.

ENTWISTLE, N. et al (1979) Identifying distinctive approaches to studying. Higher Education, 8, 365-380.

FRIEZE, I.H. (1976) The role of information processing in making causal attributions for succes and failure. in : CARROLL, J.S. & PAYNE, J.W. (eds.) Cognition and social behavior. John Wiley, New York.

GOETHALS, G.R. & DARLEY, J.M. (1977) Social comparison theory. An attributional approach. in : SULS, J.M. & MILLER, R.L. (eds.) Social comparison processes. John Wiley, New York.

MARTON, F. & SALJO, R. (1976) On qualitative differences in learning. I - Outcome and process. Britisch journal of educational prsychology, 46, 4-11.

NUTTIN, J. (1981) De menselijke motivatie. Van Loghum Slaterus, Deventer. translation of : Théorie de la motivation humaine. (1980) Presse Universitaire de France, Paris.

PASK, G. (1976) Styles and strategies of learning. British journal of educational psychology, 46, 128-148.

THEYSSENS, B. (1982) Vragenlijst studie-attitude, lijst 1. EDUCO, Vrije Universiteit Brussel.

VAN OVERWALLE, F. (1982) Prediction student-achievement at university. Proceedings of the 8th international conference of IUT at Berlin.

VAN OVERWALLE, F. (1983) Social and affective factors of succes and failure at university. Proceedings of the 9th international conference of IUT at Dublin.

WATKINS, D. & HATTIE, J. (1981) The learnig processes of Australian university students : investigations of contextual and personological factors. British journal of educational psychology, 51, 384-393.

WEINER, B. (1974) Achievement motivation and Attribution theory. New-York, General Learning Press.

WELLENS, J. (1979) De predictie van het studieresultaat in het hoger onderwijs : een terreinverkenning Intern werkdocument EDUCO, Vrije Universiteit Brussel.

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Discussion: Research on Learning

In his introduction, Marcel Goldschmid asked two questions:

1. "What does this research mean for future research?"

2. "What does this research mean for teachers?"

I think we've had some meaningful suggestions with respect to each of these issues and I have comments on each.

With respect to future research, one of the issues arising from these studies concerns methodology. The research presented has largely used student perceptions as the basic method of collecting data. Yet Art Sullivan found that students didn't perceive the effect of a remedial program that worked. Thus, student perceptions may be an insensitive measure of the effects of interventions. We need experimental studies of the sort Sullivan carried out. When such studies are not feasible, longitudinal or cross sequential studies of student outcomes would be useful additions to student perception measures.

The research in North America has tended to be more experimental and more molecular. Cognitive psychologists have generally moved toward doing work with meaningful material, but most of the research on learning is still carried out in the laboratory. There is a healthy trend of some experimentalists moving into natural settings and to using combinations of phenomenological, observational, and experimental methods. It seems likely that we will see some convergence in which the best of approaches more often used in Europe are combined with the best of the typical American approaches.

What does this research mean for teachers? Anne Hawkins laid out the basic assumption upon which all of us work; that is that all students have the ability to learn better than they normally are expected to do. I think this is an important message for teachers, who are all too inclined to feel that the problems of student learners are problems of lack of ability or motivation. Thus, they believe, failures to learn are not the teacher's fault, but rather due to the unchangeable nature of the students. Paul Ramsden makes the point that we are likely to be more effective if we catch problems early. This raises the research question of what kinds of things can be done before students are sufficiently deficient to need special treatment. What kinds of things can ordinary teachers do to identify and deal with student problems in learning?

It appears that one of the answers to our questions about early treatment is that methods of teaching influence student strategies and motivation. Frank Overwalle suggests that we change the attributions for failure, that we work on student self-esteem and that we attempt to encourage peer support for learning. Donna Canavan-Gumpert points out that there are different kinds of self-esteem and that self-esteem in reference to a competitive group may be quite different from self-esteem in relation to goals that are self-chosen. The latter seems to offer particular help for us. Arthur Sullivan's contribution today, as well as the earlier findings on effective teaching by Wilson, et al., (1975) suggests that encouragement is an important characteristic of teachers who are effective in developing student motivation. Paul Ramsden's work suggests that motivation is enhanced if students can choose their own goals and can change goals appropriately. This suggestion is supported by Malone's work on motivational factors in computer games, where Malone showed personal control to be one of the important characteristics in influencing motivation for Pac Man and other computer games.

All in all the symposium was one that offered much hope. It offered hope for us as researchers in showing that good research can be done in natural classroom settings; it offered hope for us as teachers in showing that what we do can influence the effectiveness of student learning strategies as well as effecting student motivation.

Ref. Wilson, R. C., et al, College Professors and Their Impact on Students. Wiley, 1975.

IMPROVING UNIVERSITY TEACHING THROUGH COMPUTER BASED INSTRUCTION

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For the past two decades, new technological methods and materials for educational use have been developed and used, often without adequate research or testing of potential effects upon instructors and students. Most of these procedures have been developed for elementary and/or preschool educational settings. New languages, "innovative" strategies, new equipment, textbooks and other teaching materials and even new architectural designs for educational buildings are many of the products of "educational technology." Within the last twenty years the new mathematics, competency based education designs, programmed instruction textbooks, closed circuit television instruction, audiocassette instruction, videotape instruction, individualized instruction, team teaching, performance based objectives have been proposed as solutions for the improvement of education. Few of these technologies have resulted in any real change in instructional modes in universities and colleges. Lecture and discussion instructional sessions are still the most prevalent in courses at the undergraduate level, and seminars are the most popular instructional method used at the graduate level. Videotaped lessons and/or closed circuit television instruction along with other audiovisual technologies (principally overhead projection) have been and remain the prime modes of technology in classrooms in colleges and universities. Until the advent of the PLATO^{R} system and the more recent personal computers, the computer as a new mode of instruction has been considered unwieldy and too expensive for individualized instruction in the public and private school systems. The introduction of the microprocessor and the personal computer has resulted in some changes in those beliefs, but the use of such technologies has been until recently limited by cost, inadequate educational software and little or no evaluation of results.

The present trend in the use of computer technology is toward more hardware and to some extent more software; but the latter development is much less influenced by systematic educational research data than is desirable for effective use in classrooms. Instructional technology for educational software should use knowledge drawn from the academic disciplines of human learning and interaction--sociology, anthropology, psychology, and human engineering--to effectively design a positive learning environment with appropriate reward systems for instructors and students.

An effective learning environment must be designed to capitalize on the existing student and instructor competencies and accomplishments. The design is sometimes called performance-based or competency-based instruction. In these types of learning environments the instructor plans all educational experiences to promote the acquisition and maintenance of cognitive skills with supportive behavioral components. Most educational software is designed, though often crudely, in a competency-based manner.

Properly designed competency based software can encourage the acquisition of many behavioral correlates of cognitive learning as well as substantitive content.

Environmental determinants of academic achievement behaviors are the focal point of competency based instructional technology, for it is the environment which the technological learning system can control and manipulate in efforts to produce the desirable changes in student behaviors that are called learning. The instructor using computer technology can design a learning environment that will foster learning of desired responses. Thus, the educator becomes a manager of the educational milieu and must be facile in behavioral design strategies to stimulate the student behavior necessary to achieve educational objectives. The instructional emphasis must be placed upon students' achievement of the desired academic outcomes. If instructors fail to adequately plan and program the learning environment using computer technology, learning is left to chance and the results may well be counter-productive to educational achievement and no more successful than earlier innovative instructional strategies.

Competency based education is defined as a learning environment in which explicit statements of desired competencies and criteria for evaluation are designed and made public to all participants, e.g., learners, instructors. In a competency based learning environment specific competencies are established. These competencies may include verbal as well as non-verbal skills, behaviors and attitudes. Three levels of evaluative criteria are used: cognitive acquisition of concepts, performance skills, and product skills or learner growth.

Instructional strategies used in competency based programs are selected from the evaluative data on the basis of their merit and success. Thus the learning environment is constructed from scientific analysis of student performance. Presently computer assisted/based instructional programs are mostly competency based, linear in structure and provide only a one-to-one ratio type of feedback to learners, i.e., each and every correct response receives a reward. Historically, research data (McKinnon, D. W., 1962, Gayne, R. M., 1964, Elam, S. 1971; Ramp, E. A. & Hopkins, B. L., 1971; O'Leary, K. D. and O'Leary, S. G. 1972) suggest that one-to-one ratio feedback schedules do not result in long-term retention of responses and do not encourage creative responses from learners. In other words, while such feedback procedures may promote the initial acquisition of knowledge, they do not encourage the maintenance of knowledge and the generalization and transfer of knowledge to advanced concepts and/or creative thought. Further and more comprehensive research on computer assisted/based instructional techniques in conjunction with competency based measures and differentiation of reward schedules is necessary to provide more concrete evidence of the effectiveness of such programs.

The Council on Learning (New Rochelle, N.Y.) has expressed several concerns about the responses of academia to the new instructional computer technology. These concerns are pertinent to present and future research about computer technology in educational settings and include the following:

> 1. Though there are over 150,000 personal computers in schools and colleges, most of the effect on educational policies, procedures, and goals has been cosmetic rather than educational.
>
> 2. Computer technology is profit oriented. Profit goals seldom if ever are compatible with educational goals. Very little of the software is developed for the educational setting. Most of it is developed for business and government.
>
> 3. The concept of "computer literacy" has swept the educational institutions off their feet, but the definition of the concept in educational terms is at best soft.
>
> 4. Prior research has indicated that only a small amount of the new computer learning systems have demonstrated hard evidence of educational (and cost effective) values.
>
> 5. The largest market for hardware and software is the home computer. Educational software is being developed for home computers, but educators have little to say about the content of those programs. (Council on Learning, 1982)

There are other issues that educators must view with a great deal more concern than has been demonstrated in the rush to board the computer bandwagon. Controversy exists over the possibility of low-level radiation and eye problems from the use of CRT and/or video display terminals. An official of the Food and Drug Administration Bureau of Radiological Health in conjunction with an official of the Computer and Business Equipment Association asserts that CRT and video display terminals (VDT) are safe and that radiation is well within governmental guidelines. However, the American Optometric Association suggests that persons who spend a significant amount of time using CRT's or VDT's should have their eyes examined regularly. Eye strain seems to be a particular problem with operators. Also the fact that users tend to sit for long periods of time is thought to impair blood circulation. Rest breaks with physical activity are suggested to counter negative effects. The Motivational and Stress Research Section of the National Institute of Occupational Safety and Health has suggested that eyestrain and muscular pain can be attributed to the equipment and the operator's perception of the job.

Historically, learning and instruction have taken place in a social setting--a classroom or laboratory where the instructor and students interact with each other. A non-systematic stimulus-reward or punishment system has existed in those settings. Attempts by educators and/or educational psychologists to systematize these social settings have not been too successful. Learning psychologists have only reluctantly attempted to deal with the practical problems of education. They tend to remain at the theoretical level. They also suggest in subtle and not so subtle ways that the practice of instruction cannot be taught, designed or arranged. The effects of computer assisted/based instruction on human interaction is presently unknown. College and university teachers have not for the most part been exposed to any type of instructional development with computers nor have many of them wished to. The achievement of the terminal degree (masters or doctorate) seems to be viewed as the license to teach. The probability that such instructors will be able to use computer technology effectively in the classroom, to design software adequate for educational settings and to provide for the reward system is not very good. Most instructors have little knowledge of systematized reward systems and further do not accept the notion that they are necessary or of much assistance in the teaching process. Students who use computer programs for learning tend to decrease their personal interactions with other students and instructors. The impact of long term use of computers on human interaction needs a significant amount of research. To date little has been done.

Pressure from manufacturers, publishers, distributors to develop hardware is very strong, particularly on institutions of education. However, changing models leave many officials bewildered; computer hardware presently has a life of about five to seven years. If used properly it may have paid for itself at the end of that time period, but the human cost may never be paid. Computer assisted or computer based educational systems require fewer employees/faculty. What effects will thse systems have on educational systems' personnel needs? What plans are being made for other industries, agencies, etc., to absorb displaced employees?

At the University of Delaware, the Center for Teaching Effectiveness promotes improvement of instruction with computers as well as with other modes and stimulates the exchange of ideas and information resulting from faculty and student experiences. The development and testing of instructional modes that may improve instruction and learning are the primary goals of the Center. Faculty who wish to improve old or develop new instructional modes are provided small developmental grants. Computer assisted or computer based instruction is one of those modes. The presentations today are reflective of the development of instruction with computers at the University.

The first speaker, Prof. Michael Arenson, is a faculty member of the Department of Music in the College of Arts and Science. Professor Arenson, in conjunction with the Office of Computer Based Instruction and the Center for Teaching Effectiveness, has developed a computer based music learning system called GUIDO and will present a paper on ear-training and music theory drill and practice using the PLATO^R system. Professor Arenson is using PLATO^R as the learning medium.

Prof. Thomas Charles is a faculty member in the Department of Accounting in the College of Business and Economics. Professor Charles has developed a program in accounting using the IBM personal computer. The computer in this instance is used as a tool to teach accounting, but is not the primary learning medium. Students learn to use the computer and to enter transactions into an accounting general ledger program to produce financial statements. Professor Charles is using the IBM personal computer as a tool.

Prof. Mary Jo Kallal is a faculty member in the Department of Textiles, Design and Consumer Economics in the College of Human Resources. Apparel design students enrolled in an experimental course called Mass Market Appeal in fall 1982 were the first in the United States to utilize computer-aided design (CAD) to develop their course projects. The University of Delaware is the third in the United States to introduce students to computer aided manufacturing (CAM) of apparel. Major system capabilities include the ability to design and draft first and production patterns, redesign and alter stored styles, make sample pattern layouts (markers) and do pattern grading. Professor Kallal uses the CAD/CAM system as a tool not a learning medium.

Prof. Madeline Lambrecht has designed and implemented a lesson on Death and Dying for nursing and other health professionals who must face death in their regular work. Professor Lambrecht's program uses the PLATO^R system as the learning medium. Students who use the program experience death in a rather unique manner, as you will see from the presentation.

While none of the presentations will present solutionsto any of the concerns raised earlier in this paper, they will present data about student and instructor affective responses related to the use of technology in a university setting and will hopefully stimulate additional instructional/research inquiry.

References

Elam, S. (Ed) Performance Based Teacher Education: What is the State of the Art? Washington, D.C.: American Association of Colleges for Teacher Education

Gagne, R. M. The Conditions of Learning, New York: Holt, Rinehart & Winston, 1964.

MacKinnon, D. W. The Nature and Nurture of Creative Talent, American Psychologist, 1962, 17, 484-495.

O'Leary, K.D. & O'Leary, S. G. Classroom Management, New York: Pergamon Press, 1972.

Ramp, E. A. & Hopkins, B. L. (Eds) A New Direction for Education: Behavior Analysis, The University of Kansas, 1971.

PLATO^R HELPS NURSING STUDENTS CONFRONT THEIR UNEXPRESSED FEELINGS ABOUT DEATH AND DYING

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Most experiential instructional strategies in death education focus upon death fears or ways to cope with life-threatening illness and/or death. Few strategies address the issue of personal confrontation of one's own mortality. Self-awareness related to the death experience is a necessity for nursing students and other health care professionals who encounter death in their professional practices as well as in their personal lives.

A large number of these students are in their early twenties and have most of their lives ahead of them. For these students, death is an obscure event that will occur sometime in the far distant future. Given the nature of the career they've chosen, the challenge of making death and dying a reality is an instructional problem for health related disciplines.

In working with junior level baccalaureate nursing students, a variety of experiential approaches were developed to help them personalize the death experience.

Included among these were role playing, word association, and art excercises; however, the results suggested that the majority of the students had not been reached at a feeling level. An alternative strategy that would personalize the experience in a non-threatening manner while concurrently keeping the students' attention closely focused on the subject was necessary.

The PLATO^R (Programmed Logic for Automatic Teaching Operations) System was selected as the instructional strategy most closely meeting these requirements.

Using a computer to facilitate self-awareness related to death and dying provides both personalization of the experience and a constant refocusing of attention through the use of animation and the touch screen. PLATO^R also provides anonymity for the exploration of a sensitive subject such as death. In addition, PLATO^R's interactive capabilities allow for an immediate response to some of the students' concerns and fears. It is often reassuring for students to discover that others share similar concerns.

The lesson entitled, "Death: A Personal Encounter," (Copyright 1981 by the University of Delaware) was developed to help students achieve affective objectives in the personalization of the death experience. It was planned as a first step in developing self-awareness related to death and dying.

The lesson contains no didactic content but is directed toward the elicitation of feelings and beliefs related to death in general and one's own death in particular. Listed below are the lesson purpose and objectives taken directly from the lesson itself:

> **Purpose**
>
> The purpose of this lesson is to focus your attention on your personal attitudes, beliefs and feelings as they relate to death in general and your own death in particular. It is anticipated that you will utilize the personal information generated from this lesson for continuing exploration in the field of thanatology.
>
> **Objectives**
>
> This lesson will help you to:
>
> - Think about death consciously
> - Identify personal attitudes, beliefs and values relevant to death and dying
> - Describe your feelings about your own death
> - Recognize that anxiety concerning death is often a reflection of personal fears related to your own death

The lesson is divided into different sections involving the learner in two principle exercises: (1) an assessment of personal attitudes, beliefs and feelings related to his/her own death and dying, and (2) a simulation in which the individual contracts a fatal illness and thus is actively engaged in the decision-making process beginning with treatment options and ending with preferred death rituals.

The first section of the lesson collects biographical data which is used to personalize the lesson and information related to personal and professional experience (if any) with death and dying. Feedback is given dependent upon the responses chosen by the student and opportunities are offered for student input into questions.

Prior to beginning some of the excercises, the student is given an opportunity to complete a self-assessment tool designed to provide some guidance about his/her continued progress in the lesson. Feedback includes suggestions regarding additional resources as well as an explanation of the anonymous notesfile connected to the lesson. Upon completion of this section, the student is presented with an analysis of his/her responses in combination with suggestions for further clarification. Graphics are personalized and maintain the individual focus throughout the lesson.

The second major part of the lesson is a simulation in which the student contracts a life-threatening illness and eventually dies. Extensive branching allows the student to maintain control of his/her own treatment regime as well as decisions regarding death and burial arrangements. The simulation concludes with the presentation of a realistic death certificate incorporating personal data supplied earlier by the student. In fact, the student dies at the age he/she chose earlier. Other opportunities for individual input are available throughout the lesson culminating in a eulogy written by the student. The purpose of this exercise is to move beyond the death experience and describe how he/she would like to be remembered by others.

Numerous precautions are taken throughout the lesson in recognition of the personal sensitivity of the subject matter. Recent personal experience with terminal illness or death is assessed in the initial part of the lesson alerting the professor to the possible need for an alternative assignment. Certain information collected within the lesson will automatically jump the student out of the lesson and the lesson is programmed not to allow the student to return unless there is authorization from the professor following a conference with the student.

Student and faculty response to the lesson has been very positive. Student response is documented by an on-line questionnaire presented at the end of the lesson. Data obtained from several questions directly related to the lesson purpose and objectives as well as to the use of a computer as an instructional strategy in death education are presented below:

— This PLATO^{R} lesson facilitated my awareness related to my own death and dying.

Total Responses = 120

Mean = 1.967

Standard Deviation = 0.921

Strongly Agree	39	32.5%
Agree	57	47.5%
Neutral	16	13.3%
Disagree	5	4.2%
Strongly Disagree	3	2.5%

— PLATO^{R} is well suited to presenting instructional material in this subject.

Total Responses = 120

Mean = 2.125

Standard Deviation = 0.996

Strongly Agree	33	27.5%
Agree	55	48.8%
Neutral	20	16.7%
Disagree	8	6.7%
Strongly Disagree	4	3.3%

— This PLATO^R lesson helped me to focus on my own death and dying more thoroughly than other teaching learning strategies.

Total Responses = 120

Mean = 2.308

Standard Deviation = 1.039

Strongly Agree	28	23.3%
Agree	48	40.0%
Neutral	26	21.7%
Disagree	15	12.5%
Strongly Disagree	3	2.5%

— What did you like most about the lesson, "Death: A Personal Encounter"?

	Responses
Thoughts, feelings about death	57
More personalized than traditional methods	13
Realistic simulation	10
Graphics	9
Facing reality of death	8
Eulogy	7
Feedback	6
Privacy on the computer	4
Others	17

Total Responses = 131 (open-ended question)

— What did you like least about the lesson, "Death: A Personal Encounter"?

	Responses
Nothing	31
Unrealistic situation	15
Too emotional	13
Choices offered not adequate	13
Didn't agree with feedback	12
Didn't like using computer for this subject	10
Seeing my name on tombstone-imagining myself dead	9
Pace too slow	8
Others	6

Total Responses = 117 (open-ended question)

These responses as well as student suggestions offered within the lesson itself prompted a revision of some of the format. For example, student response that labeled the situation as unrealistic resulted in an alternate simulation for non-smokers. Overall, student response has reinforced the idea that computer instruction can be an effective strategy in death education.

Faculty response within the College of Nursing has also been positive. The lesson is currently utilized in both the undergraduate and graduate departments. The lesson provides a springboard for later group discussion and content presentation.

Additional research on the desirability from the learner's point of view, of matching or mismatching learner cognitive style and an instructional strategy (PLATO^R) in death education is presently being conducted. It is anticipated that this type of research will be useful in further individualizing instruction in the area of death education.

STUDENTS USE A CAD/CAM SYSTEM TO STUDY APPAREL DESIGN AND PRODUCTION

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University of Delaware

Until recently, the Apparel Design Program at the University of Delaware focused only upon the first three steps of the Design and Production Sequence. Students were provided with a traditional fundamental view of the apparel industry. A new dimension was added to the program with acquisition of an apparel-oriented computer-aided design and manufacturing (CAD/CAM) system. Students enrolled in the program were the first in the United States---and possibly the world---to utilize computer-aided design. They were the third in the nation to use computer-aided grading and marker making. Computer software is still not so advanced that a sketch is input into the system and a command entered to automatically output a constructed shirt or a jacket! (Figure 1.) The sequence required to design and produce a garment is still much more complex than this---and usually takes an average period of six months to complete.

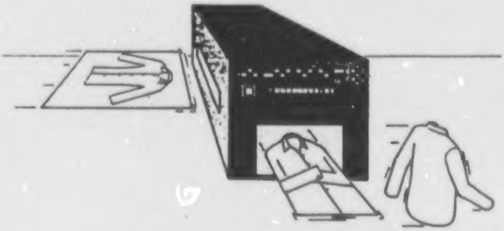

Figure 1.

Several steps in the apparel design and production sequence that have been performed manually, can now be performed quickly and accurately with the assistance of a CAD/CAM system. CAMSCO, INC. of Richardson, Texas developed and integrated the two-scope computer system purchased by the Department of Textiles, Design and Consumer Economics. The system utilizes three Hewlett-Packard computers to integrate the hardware components. The control unit consists of a DEC (Digital Equipment Corporation) micro-processor, a video display input/output operator terminal, a diskette drive, and an output printer. The large electronic digitizer measures about 4' x 5' and is used to input digital pattern shape information with a hand-held cursor. Each of the two interactive graphic display units are equipped with an operator function box, data tablet, and stylus pen. These tools are used to manipulate two-dimensional graphic pattern data. The mechanical flatbed plotter is designed to plot pattern pieces and pattern layouts (markers) on plain paper ranging in width from three feet to six feet.

SOFTWARE COMPONENTS

Three software packages were acquired: CHECK, MARK, AND DESIGN. CHECK enables the system operator to enter pattern and grade rule data at the digitizer to verify and edit pattern piece shapes and points, to verify pattern grades, and to draft simple patterns, such as a cuff, from given measurements. MARK is used to facilitate layout of pattern pieces for several sizes of one style on one marker---sometimes with as many as 60 to 100 pattern pieces on a 40-foot length of fabric! The object is to maximize fabric utilization, thus optimizing the most expensive component of the garment. DESIGN enables the designer to develop patterns two-dimensionally. With the flick of a data pen, darts can be manipulated by dividing and pivoting them to new locations, new lines may be digitized or sketched, and pattern pieces may be split or traced. Additionally a grid may be requested to aid in line placement, pieces may be zoomed up or down in scale, and seam allowances may be added with great ease. Over one-hundred other functions may also be requested.

Benefits of such a computer system in the classroom include the ability to parallel the learning process and educational environment with actual industry practice, the potential for integrating informational learning with experiential learning, the opportunity to expand the student's ability to solve problems and make decisions through role simulation exercises, the ability to prepare students for life-long learning, and the opportunity to build a learning community with students, professors, and industry representatives learning from one another.

In reality, the benefits mentioned above, coordinate well with the broad instructional goals of the apparel design program. These include the development of designers knowledgeable about the interrelationships between design and production, capable of blending knowledge with experience and with creative and technical skills, and capable of problem-solving and decision-making. In addition designers are encouraged to develop positive attitudes toward the integration of highly creative visual and tactile skills with computers. Often designers who are quite willing to cut and drape directly in fabric, become suddenly timid when faced with the prospect of using a computer. Finally designers are directed to develop life-long learning skills which utilize, integrate, and internalize knowledge.

These goals are being realized through a Three-Phase Operational Plan (Figure 2.) that includes two preliminary phases followed by Integration of Instructional Strategies, Instructional Development, a third phase, and Learning Profile Development. The phase boxes refer to those parts of the plan that take place in the classroom.

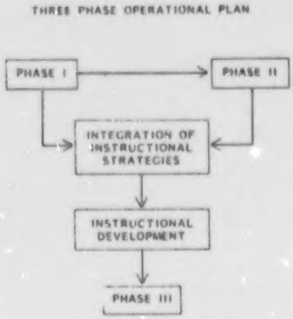
THREE PHASE OPERATIONAL PLAN
PHASE I
PHASE II
INTEGRATION OF INSTRUCTIONAL STRATEGIES
INSTRUCTIONAL DEVELOPMENT
PHASE III

Figure 2.

The Instructional Strategy

The first phase began late summer, 1982 with the installation of the CAD/CAM system and 4 weeks of training for two faculty members. Students who were enrolled in an experimental course, Mass Market Apparel, examined the Design and Production Sequence from a production viewpoint. Term projects required simulation of the procedures, decisions, and job roles required to plan, design, and produce a line of moderately-priced dresses. The CAD/CAM system was used to introduce computer-aided design and marker making. For many students this proved to be their first major exposure to computer technology or to a non-teaching computer system. For this first course, the instructional format closely followed that used in the original system training: lectures were followed by system demonstrations and practical exercises. Students became familiar with the terminology and format needed to issue commands, select functions, and to work with the interactive graphic displays.

At the end of the term, the enrolled students and professor discussed the course and considered alternative instructional modes. In addition, formal course evaluations, observations, and other informal discussions with students were used in evaluation. Students unanimously agreed that the course be added to the Apparel Design program, however, several problems were noted. Because the system provides only minimal feedback, the sources of some command errors were difficult for students to detect without a proctor present, thus raising frustration levels at these times. Students also tended to polarize into those who did or did not take responsibility for using the system independently. The workload appeared excessively heavy for the number of credits offered. Instructional methods for resolving these concerns were examined and revised for future use.

After observing student learning attitudes and behavior in PHASE I, Mass Market Apparel, it appeared that factors other than intelligence might be influencing student adaptability and success on the system. As a result, PHASE II investigated the relationship between personality and success on a specific computer task, namely marker making. The major components of the project included administration of the California Psychological Inventory (CPI), completion of the Computer-Aided Marker Making Project, and completion of an Attitude Questionnaire followed by project Evaluation.

Students enrolled in Apparel Design I and II spring semester, 1983 were given the CPI, a personality measure designed to assess the "normal" individual. This measure has been widely researched and has generally been found reliable and valid for high school and college students from many cultures. The CPI includes 18 personality scales (Figure 3.) that are grouped into four broad categories. Class I scales place a common emphasis on feelings

CALIFORNIA PSYCHOLOGICAL INVENTORY

CLASS I. Measures of Poise, Ascendancy, Self-Assurance, and Interpersonal Adequacy

1. Do Dominance
2. Cs Capacity
3. Sy Sociability
4. Sp Social Presence
5. Sa Self-Acceptance
6. Wb Sense of Well-Being

CLASS II. Measures of Socialization, Responsibility, Intrapersonal Values, and Character

7. Re Responsibility
8. So Socialization
9. Sc Self-Control
10. To Tolerance
11. Gi Good Impression
12. Cm Commonality

CLASS III. Measures of Achievement Potential and Intellectual Efficiency

13. Ac Achievement via Conformity
14. Ai Achievement via Independence
15. Ie Intellectual Efficiency

CLASS IV. Measures of Intellectual and Interest Modes

16. Py Psychological-mindedness
17. Fx Flexibility
18. Fe Femininity

Figure 3.

of inter-personal competency and effectiveness by measuring poise, ascendancy, self-assurance, and interpersonal adequacy. In contrast, the Class II category is primarily concerned with character and measures socialization, responsibility, intrapersonal values, and character. Measures of achievement potential and intellectual efficiency are assessed by the scales included in Class III. Class IV personality scales vary independently of one another, but measure intellectual and interest modes believed to be of broad social significance. (Gough, 1975).

The standardized scores for each student were averaged and the means used to develop a personality profile (Figure 4.) of the Apparel Design students. This profile suggests that these students are of average leadership ability, as well as outgoing, sociable, poised, and spontaneous. Although they are self-confident and verbally fluent, they may also exhibit defensive behavior. In contrast to their strong social skills, Class II scales portray this group as somewhat immature, impulsive, irresponsible, and under-controlled. They may also be self-centered, undependable, excitable, and uninhibited, as well as judgmental and narrow in attitude.

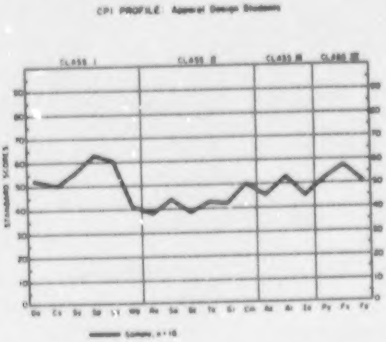

Figure 4.

In agreeme[illegible]ore configurations found for creative individuals, the profi[illegible]sign students suggests that these subjects also pos[illegible]udes and strong, independent achievement drives. (Go[illegible])

The ne[illegible] assess how the creative students described above perform on a [illegible]ated task. The students were assigned a computer-aided marker ma[illegible]t. Assigned readings included an overview of Computer-Aided Marker Making and the marker making unit of a condensed system manual written specifically for use in the classroom and for short workshops. In a preliminary lecture, students were provided with an overview of marker making. Marker making efficiency was defined as the maximum utilization of fabric in a pattern layout. (Solinger, 1980.) The students, however, were not told what a good efficiency goal might be in order to provide a positive, non-frustrating experience with the computer system. As a result, the project goals were rather general. Students were expected to lay one or more efficient multi-size markers for a given style, to experiment with the system marking functions,[1] and to save the most efficient marker(s) for storage in the system memory unit. In this way the markers could be analyzed later and the students could also be given a miniature plot of their completed layout. Students were also expected to develop a set of guidelines for laying an efficient marker by analyzing the marker making procedures followed.

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[1] Students were encouraged to have some fun and to try out as many functions as they might like. It was important for them to realize that the system would not malfunction if they hit the wrong button.

A demonstration of computer-aided marker making further illustrated the procedures involved and highlighted the system functions. Students were given an illustration of the design and shown the pattern piece shapes they would lay in a marker for sizes 8, 10, and 12. After completing and saving their final marker, each student completed a questionnaire. The questionnaire was designed to discover more about their learning style and their feelings toward the system, their efficiency, and their competency on the system. A partial listing of questions related to learning style and their responses appear in Figure 5.

ATTITUDE QUESTIONNAIRE: COMPUTER-AIDED MARKER MAKING PROJECT

QUESTION	RESPONSES*					MEAN
LEARNING STYLE	5	4	3	2	1	RESPONSE
11. I liked to try out the marker making functions before I read the instructions.	2	1	2	8	5	2.7777
15. I decided not to read the course handouts before I came in to lay the marker.	0	1	2	5	10	1.6666
14. I would have preferred to discuss the marker making procedures with others in the class so I could understand the material better.	1	3	9	4	1	2.9444
22. I like to have clearly specified guidelines established before I begin a new task.	4	7	5	2	0	3.7222
13. I like to start making my marker by laying in the pieces impulsively.	1	4	3	5	5	2.5000
26. I enjoyed playing with the computer by trying out the many marker making functions to see what they would do.	7	9	1	1	0	4.2222
29. I really enjoy "discovering" solutions to problems on my own.	7	5	5	1	0	4.0000
24. I would prefer to have had reinforcement from someone experienced on the computer as I attempted my first marker.	4	5	4	4	1	3.3888
31. I would prefer a task that allowed me to work closely with others.	1	6	6	4	1	3.1111
6. I tend to postpone my projects until the last day or so.	3	6	6	3	0	3.4444

*5=Strongly Agree; 1= Strongly Disagree

Figure 5.

The Results

In general, student responses indicated that they preferred to prepare for the project by reading the handouts before attempting the marker making task. Additionally, they approached the task in an orderly manner. As might be expected, some students preferred to work alone, whereas others preferred to work with companions. They seemed to agree that a proctor should be available for assistance.

The students did not find the marker making task frustrating---although this could easily be modified by requiring the students to reach a "high" efficiency level on a subsequent project. The students felt competent at the task, and importantly, felt that they would be able to show others how to use the computer to lay a marker. They appeared unsure about their efficiency ratings. The students' attitudes toward the project were positive. They generally felt "in control," except for the few individuals who accidentally hit the abort or slide functions. The students stated that they would like to try to improve their efficiency rating if they had more time.

After completion of the marker making task, student *success* was evaluated. Student marker making efficiency ratings spanned a narrow range: 80.9% to 84.91%. The mean rating was 82.75%. In industry, a good efficiency rating might be in the range of 85% or higher--with each fraction of a percent becoming increasingly difficult to achieve. In contrast, the time spent varied broadly, ranging from 30 minutes to 180 minutes. The mean time spent completing the project was 87 minutes. The students attempted from one to three markers each.

Upon completion of the task, free responses indicated that 50% of the students expressed positive attitudes toward the marker making project. 28%

were unsure or felt inept as a result of the project, 11% felt challenged, and another 11% felt relieved when they completed the project. Why the variation? Less positive responses may be a result of students who misinterpreted a function. Other students may have had difficulty solving spatial problem-solving tasks. The positive responses may be the result of the generalized guidelines, a high efficiency rating, the challenge of successfully completing a new task, or previous computer exposure.

Students were asked to freely generate what they found to be the five most important guidelines for marker making. These were categorized into two groups including guidelines with general application to marker making and guidelines directed specifically toward computer-aided marker making.

Evaluation of the Results

Pearson's Correlation Coefficient was used to examine the relationship between two CPI classes (I and II) and personality scales within these classes with student success on the computer-aided marker making task. Success on the task, as indicated earlier, was defined as a high efficiency rating combined with a short completion time.

Evaluation revealed a positive relationship between self-control and marker making efficiency at the .05 level of confidence ($t=2.85$). Regression analysis indicated that self-control and social presence had a significant relationship with marker making efficiency ($r=.699$). The normal probability plot in Figure 6 shows a reasonably good relationship between the combined self-control and social presence scales and marker making efficiency. Self-control was one of the two lowest scores and social presence represented the highest score on the CPI profile of these apparel design students (Figure 4.) According to Gough, self-control assesses the degree and adequacy of self-regulation and self-control. Social Presence assesses factors such as poise, spontaneity, and self-confidence in personal and social interaction. When merged, these two scales describe a group of energetic, self-centered, clever, imaginative, and impulsive extroverts. (Gough, 1975.)

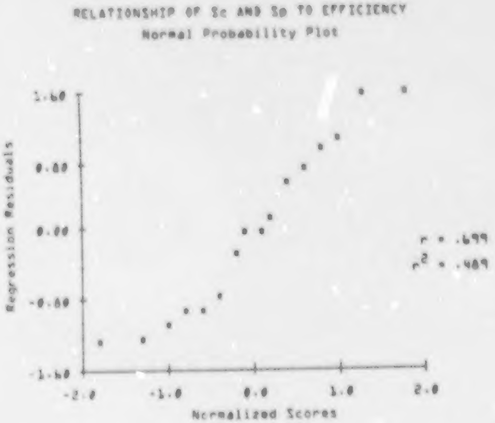

Figure 6.

INTEGRATION OF INSTRUCTIONAL STRATEGIES

Just how might the feedback from Phase I and the findings from Phase II be integrated? Phase I and II evaluations were reevaluated and resulted in seven instructional strategies that will be introduced in Phase III Fall, 1983. These strategies directly related to the instructional goals and to the relationship of self-control and social presence with student efficiency. Additionally, it was decided to minimize the "how-to" training component while simultaneously emphasizing utilization of the system as a tool for solving apparel design and production problems. Instructional strategies and the rationale for inclusion in the instructional format include:

GRADUAL SYSTEM INTRODUCTION. The students will be gradually introduced to the CAD/CAM system through a sequence of three Apparel Design courses in order to provide early positive computer experiences and to limit the quantity of technical information presented in any one course, thus placing greater emphasis on the system as an aid to problem-solving.

LARGE GROUP LECTURE FOLLOWED BY SMALL-GROUP DEMONSTRATION. Large-group lecture was recommended to maximize lecture time and to enable students to benefit from the questions and comments easily spurred on by a lab class of no more than 20 students. Following this lecture with demonstrations to small groups of 4 or 5 should ensure that all can see and hear. The instruction for subsequent classes can be personalized by recording any comments and questions immediately after each session and using them to develop future lecture and demonstration content.

ROLE COMPETENCY acquaints the students with various job roles and skills, as well as with new approaches to problem-solving.

STUDENT PROCTORING will require that each student proctor another student, perhaps by working in pairs, thus requiring them to play two roles: teacher and learner. In addition, proctoring appears to increase learning responsibility and might also help to reduce computer anxiety.

UTILIZATION OF UNIT MODULES for each CAD/CAM-related topic will provide an organized written package of materials for each topic. These will introduce the topic, emphasize the major objectives, skills, and knowledge required to develop competency, and will also guide the student in applying these competencies to design and production problems.

STUDENT GENERATION OF PRINCIPLES. After completion of each computer module, the students will reassemble to analyze the task and to generate important principles or concepts that they might utilize to perform the task in a more systematic manner in the future.

STUDENT LEARNING RESPONSIBILITY. As students progress through the three-course sequence, they will be required to take greater responsibility for usage and implementation of the system---through peer proctoring, as well as through independent utilization of resources. This should build autonomy and life-long learning skills that they can apply in problem-solving situations.

INSTRUCTIONAL DEVELOPMENT

Unit modules will be developed for major topics for each of the three courses. Each will include an introduction to the topic (i.e. Pattern

Grading---what it is, its function, and a comparison of manual and computer grading procedures). Behavioral objectives will indicate their goal competencies. Required and optional readings will correspond with study questions that are to be completed before the lecture and demonstrations. Lecture and demonstration formats and visual aids will be planned and prepared for each module. Each will relate to the unit introductions, objectives, and readings, as well as emphasize major theoretical points and illustrate how procedures are performed. A mastery quiz testing theoretical objectives will precede each lab exercise. Once the lab exercise has been performed and evaluated, both the theory and computer procedures will be applied to a new situation---most likely in a term project. Specifically-designed course evaluation forms will be used to secure student reactions to these materials, as well as to the course in general.

During the third phase, the completed units will be introduced sequentially to the three Apparel Design courses while also relating them to the course topics. In Apparel Design I, students will be introduced to data entry, check, and plotting from the scope. In Apparel Design II, grading and marker making will be introduced. In these first two courses, students will not be asked to place system commands. In Mass Market Apparel, however, they will be given greater task responsibility, including system booting and halt; command entry for grading, style definition, and marker making, as well as introduction to computer-aided design.

CONCLUSIONS

Further investigation will continue in the apparel program at the University of Delaware. The CPI will continue to be given to design students and student evaluations and recommendations for course refinement will be reviewed. Eventually a learning profile of apparel design students will be developed that may further aid in personalizing the instruction.

Industrial CAD/CAM systems can be successfully introduced into the classroom. Because such systems are generally not instructional systems, educational strategies must be developed to provide positive learning experiences and to solve problems encountered in the learning situation. The instructional strategies introduced here suggest solutions that can be applied to other programs utilizing industrial computer systems.

Glossary

Familarity with the apparel design and production sequence is essential for understanding the fundamental terminology and steps involved in the production of apparel. The eight major steps in the sequence include:

DESIGN INCEPTION. The creation of the design idea evolves from a variety of sources of inspiration---many of them from museum collections or from fabric design, texture, and color sources.

PATTERN DEVELOPMENT. A pattern is developed two- or three- dimensionally that describes the shapes of each component part of the final three-dimensional design in a two-dimensional manner.

SAMPLE GARMENT. The pattern is tested out in fabric, thus enabling the designer to refine the design or fit before the pattern is corrected for production.

PRODUCTION PATTERN. A "perfect" production pattern is made in tagboard in the basic or sample size. This is the pattern used in production, because it incorporates excellent fit, a well-refined design, and efficient utilization of fabric.

GRADING. The sample size production pattern is systematically enlarged and reduced to provide a range of graded pattern sizes.

MARKER MAKING. The marker is made by placing the graded pattern pieces for several sizes on a "marker" equal to the fabric width. Fabric waste between pattern pieces is kept to an absolute minimum. (Figure 7.)

CUTTING. The pattern pieces are individually cut from as many as two dozen fabric layers at one time using the marker layout as a cutting guide.

SEWING. The individual garment pieces are sewn together on high-speed industrial machines by trained operators to form the completed garment that is then sold and distributed to retailers for the consumer market.

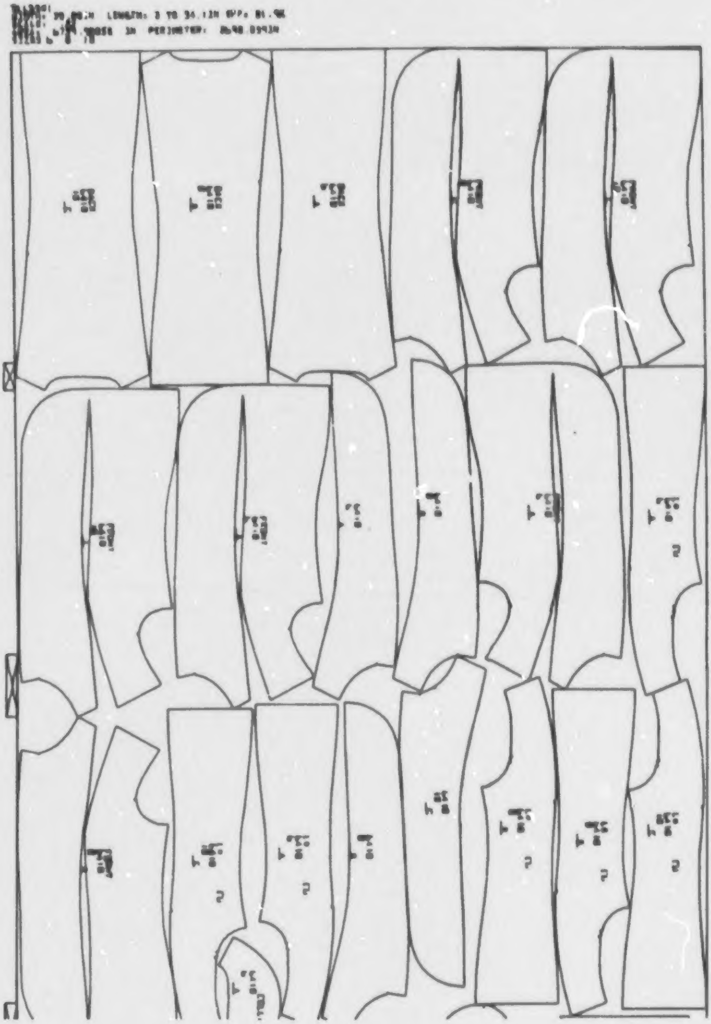

Figure 7. MARKER

REFERENCES

Berquist, William and Steven R. Phillips. A HANDBOOK FOR FACULTY DEVELOPMENT. Washington, D.C.: The Council for the Advancement of Small Colleges, June 1975.

Gough, Harrison G. MANUAL FOR THE CALIFORNIA PSYCHOLOGICAL INVENTORY. Palo Alto, CA: Consulting Psychologists Press, Inc., 1975.

Green, Jr., Ben A. PSI BY PSI: A WORKBOOK ON THE PERSONALIZED SYSTEM OF INSTRUCTION. Washington, D.C.: Center for Personalized Instruction, 1975.

Megargee, Edwin. THE CALIFORNIA PSYCHOLOGICAL INVENTORY HANDBOOK. San Francisco: Jossey-Bass, 1972.

Ryan, T. A., B. L. Joiner, and B. F. Ryan. MINITAB REFERENCE JOURNAL. University Park, PAA: The Pennsylvania State University, March 1981.

Solinger, Jacob. THE APPAREL MANUFACTURING HANDBOOK: ANALYSIS, PRINCIPLES, AND PRACTICE. New York: Von Nostrand Reinhold, 1980.

WHEN ACCOUNTING STUDENTS LEARN BASICS WITH MICROCOMPUTERS

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Students are learning accounting in the College of Business and Economics at the University of Delaware by using microcomputers to enter transactions into an accounting general ledger program to produce financial statements. They are learning that the computer can be used as a tool to perform accounting functions.

This project was begun because students were graduating without enough experience with computers. Industry and public accounting firms wanted recruits to have some knowledge of computers and information systems. Both small and large companies now use computers especially for their accounting systems and the lower prices for microcomputers has resulted in even the very small companies moving from manual accounting systems to computer systems.

Financial Accounting, the beginning accounting course, enrolls about 1500 students a year and is taken by most Business School students. It is also required by a number of disciplines in other colleges at the University. The course has been standardized by using one text with common assignments of chapters covered, uses selected exercises and problems for homework, and departmental examinations.

Many instructors are used for this course and while the use of the practice set was an extension of the standard philosophy, more coordination and training for the faculty was necessary than ever before. Use of the microcomputer in teaching required for the first time that all the instructors be brought together to discuss the content of the course and how the practice set will be used with the course.

To use the practice set it was necessary to bring together 1) a faculty developed practice set, 2) a commercial computer program, and 3) the microcomputers.

The practice set which presents various transactions of a small business, requires the students to prepare accounting entries. The practice set supplements the text, and replaces some of the text problems previously used in the course. There are eleven lessons and statements prepared for six months. Each lesson is related to a particular chapter in the text. After every two lessons (except February) month-end statements are prepared. Accounting entries are prepared by the students before they go to the computer. They then enter the information in the computer after which they obtain financial statements.

The program selected was one that will run on a number of microcomputers and is available at the local computer store. Files were established to provide the necessary data to make the system work. The various accounts were established and amounts entered in the prior year fields. These amounts represent the correct totals for the current year and are included in the diskette provided to each student so when comparative statements are produced the students can get immediate feedback as to whether they have done the work correctly.

The computer we use is a microcomputer which has a cathode ray tube (CRT) screen, a key board, two disk drives which use the 5 1/4" floppy diskettes for storage, and a dot matrix printer. The computer has an internal memory of 64,000 bits of information.

Objectives

With this system we would expect the students to learn:

How the computer works in order to become at ease working with it.

What effect a particular input entry will have on the final financial statements.

To be accurate.

The necessity for controls in accounting systems.

Requirements

Needs of the students were used to determine the requirements in the development of the practice set and include the following:

The practice set has to follow or supplement the text because it is intended to reinforce the text content.

Terms had to be identical to eliminate confusion for new accounting students.

Student time must be kept at a minimum because the course is already very time consuming.

Since the course is given to students with varied backgrounds, the computer must be easy to operate and require no prior computer experience. User friendly, which means easy to use and fast response is an essential characteristic of the system.

> Finally, the program is an actual accounting system as it would exist in a small business with all the accounting controls that are actually used.

How easy should the program be to use? It has to be as easy to start as inserting the diskettes in the disk drive and turning on the power switch. Menus have to be used, with a list of the functions the programs perform, to make it as easy to use as typing one number to tell the computer what you wanted it to do.

First Trial Run

A trial run of the system was conducted in the Fall of 1980. Two sections of the course were taught with only one section using the new practice set. A table top minicomputer was rented using a vendor's accounting program.

At the conclusion of the test a questionnaire containing eleven questions regarding the use of the computer practice set was given to both sections. Both classes felt they should use the computer and that we should continue with their use in the course. Students who had worked with the computer felt that they had learned accounting by using the practice set, but that the 12 month periods we used in this first set were much too long.

After the first test, time-sharing facilities with terminals, several minicomputers with printers, and the new microcomputers were considered. Various programs which could be used by these various computers were examined and a program that was easy to use and could be used on several microcomputers was selected. The practice set was simplified so as to reduce the number of sessions needed at the computer from 12 to 6. The number of transactions was decreased to eliminate those that were similar or too complicated in response to the students' suggestions for improvements.

Second Trial Run

The second trial run was conducted in the Spring of 1982 using two microcomputers. The second test results indicated a need to continue the effort to simplify. More duplicate transactions were eliminated, diskette handling was simplified, and instructions were clarified.

Student responses on the questionnaire were very positive both in the need to use computers and the effects the practice set had on learning accounting. In discussions with the professors, it was felt the students should for one month of the six prepare financial statements manually. A revision was made to tha practice set instructions so that at the end of the second month of the set, only a trial balance report was produced. Students used this data to manually prepare the financial statements.

Implementation Full Scale

After revising the practice set, installing the microcomputers in a new microlab, preparing the students' diskettes, and hiring a microlab coordinator, the practice set was ready for 800 students attending 23 sessions taught by 14 instructors. The professors were trained in one instructional session in the microlab.

The microlab was open for students from 9 a.m. to 9 p.m. on weekdays and from 9 a.m. to 1 p.m. on some Saturdays. Student assistants were available to log students on the computer, assign diskettes, assist students and to check and grade statements.

After the first full scale use of the practice set it was obvious that not all instructors were enthusiastic about using the computer. Some students commented that their instructor posted the solutions to the problems so all they had to do was copy the answers and type them on the computer. They missed the learning experience. Further training for faculty is necessary.

To assist students to operate the computer in the microlab, orientation sessions were scheduled in the spring term to discuss procedures, the use of the floppy diskettes and the function of the different keys on the keyboard.

Evaluation

Figure A indicates that more than 75% of the students felt the practice set on the computer was helpful in learning accounting; however, 16% felt it was distracting and a time consuming waste.

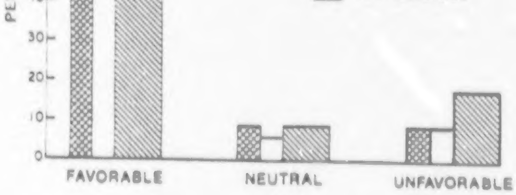

EXHIBIT A

This unfavorable response was actually higher than the two earlier trial runs, when it was less than 10%. It is possible that this response was due to the different emphasis put on the practice set by the various instructors.

Students were also asked if the use of the computer was a worthwhile experience.

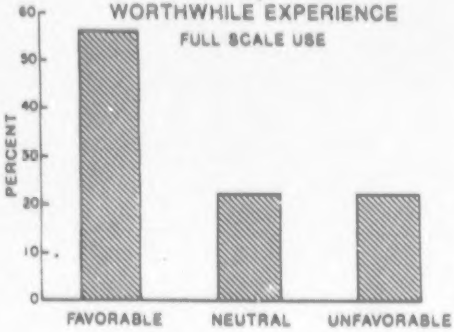

EXHIBIT B

Figure B indicates that although a large majority was positive, about 22% said it was not worthwhile. Some of their comments were: "The computer does not belong in an accounting class." "It is an exercise in typing." "Too much work." Explanations for the negative assessment are not clear. Further research is needed.

Results

Data from student evaluations suggest that students are more at ease with the computer; it no longer threatens them. This was verified by the questionnaires after both of the trial runs. Students have learned how the input entries affect the financial statements. This is particularly true when errors are made and it is necessary to make the correcting entries. Students have also learned to be accurate and neat. They found it is essential to correctly enter the transactions and finally, the control mechanisms of the program assist the students in assuring correctness of their entries. This program contains such controls as hash totals of account code numbers, check of account codes, check of number of transactions, and balance of amounts entered. Therefore, experience with these controls assures that the students have gained some appreciation of their importance.

Faculty have learned that students responses can be effective i. improving the teaching method. Faculty concerns about the practice set weresoon confirmed by the students' responses when they were asked how the set could be improved. The program can be refined by listening to students and other faculty members.

The coordination effort for the faculty was more than had been expected because a medium that they were not familiar with was being used. The faculty had to be trained to use the computer. They approached it with various degrees of enthusiasm. But they had to learn to keep ahead of the students who were learning by using the computer to complete the practice set. Because the programs were easy to use, all students were able to complete the lessons and almost all of them became at ease with the computer and in some cases were one step ahead of the instrutor.

Faculty learned an actual commercial program that is used in a small business can be used to teach accounting.

Finally, students did not object to taking on additional work--learning how to use the computer--if they felt it was worth the effort. In fact, in the trial runs and during the first session of full implementation, the course evaluations indicated that the students felt that when using the computer the course was not quite as difficult as it was when the computer was not used. Therefore, since they saw the benefits, it appeared less difficult.

In summary, the use of computers in the course facilitated student learning. Evaluations by students assisted in further course development. Faculty development needs more planning for future performance. Overall, the computer assisted accounting course was successful, and many other accounting and business courses are now beginning to use the micro-laboratory.

THE GUIDO[R] MUSIC LEARNING SYSTEM

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Abstract

The GUIDO Music Learning System consists of a set of computer-based ear-training and music theory lessons and operates on the PLATO[R] System at the University of Delaware. All of the lessons are graded and table-driven.

An attitude survey of students in ear-training and theory courses who use the lessons is conducted every semester. The survey is an excellent tool for allowing the instructor to make necessary modifications in the lessons themselves as well as in the environmental conditions under which they are used.

Background

In 1973, Professor Fred Hofstetter, Associate Professor of Music and Director of the Office of Computer-Based Instruction at the University of Delaware, developed an Automated Teaching and Research Laboratory designed to help students learn how to hear intervals, melodies, chords, harmonies, and rhythms, and to help the researcher learn more about how students hear music. The laboratory now utilizes a computer-based learning system which operates on the PLATO system at the University of Delaware and includes both ear-training and music theory drill-and-practice materials. The system, called GUIDO, is named after an 11th-century monk named Guido d'Arezzo who is reported to have invented the musical staff and the solfege system. However, the name GUIDO is now used as an acronym standing for Graded Units for Interactive Dictation Operations. Not only are GUIDO materials available on the PLATO mainframe, but they are also available on eight-inch floppy disks for use with a Micro PLATO[R] System.

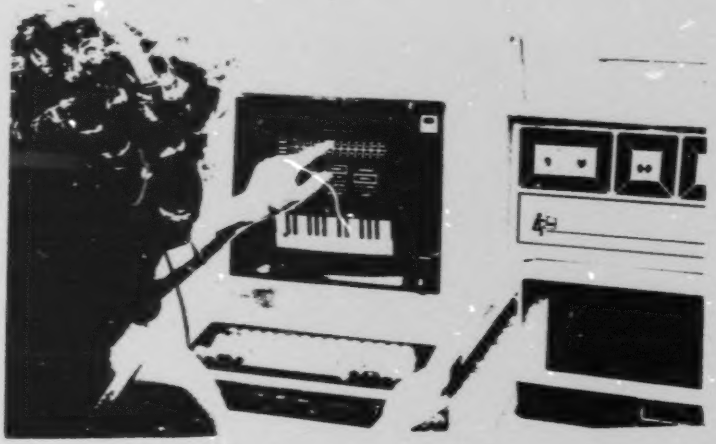


Figure 1. Micro GUIDO Student Station

Figure 1 shows a typical GUIDO Music Learning System student station. Each student station consists of a PLATO computer terminal, a University of Delaware Sound Synthesizer, a set of earphones through which the student listens to the music, and a floppy disk drive. Since the PLATO screen is touch-sensitive, the student can interact with GUIDO lessons simply by touching musical symbols on the screen. The resulting interaction is immediate and highly stimulating, and the use of touch input makes it possible for the student to work with symbols that would be too complex to enter by means of an ordinary computer keyset. The high resolution graphics of the PLATO screen make it possible for a lot of musical information to be displayed at once.

The Micro GUIDO system has a much quicker response than the mainframe version. Although the Micro GUIDO version is very valuable for teaching, instructors at the University of Delaware still use the large mainframe version because of the capability of the system for collecting data necessary for perceptual and learning research.

Ear-Training

The GUIDO ear-training materials, developed by Professor Hofstetter, are used by students in the first two years of ear-training instruction at the University. The ear-training curriculum of the GUIDO Music Learning System consists of five strands or tracks in the areas of intervals, melodies, chord qualities, harmonies, and rhythms. All materials are of the drill-and-practice variety. Each of the strands is used for more than one semester of ear training. In fact, the student is involved with the melodies, rhythms, harmonies, and chord qualities strands for the entire two years. Two of the most elegant strands, Intervals and Harmonies, are described below.

Figure 2 shows what students see when selecting a typical unit in the Intervals strand. They hear the interval being played and are then asked to touch the PLATO touch-sensitive screen to identify what they have heard. If they respond incorrectly, they are given prompts leading them to the correct answer.

The Intervals units and all the units in the GUIDO Music Learning System are graded so that the student starts with easy units and advances to more difficult ones. Also, all units in the GUIDO system are competency-based which means that a student must reach a specific criterion level before going on to the next unit in the strand. For example, as indicated in Figure 2, students must identify correctly a string of 12 intervals correctly out of 13 within four seconds or less before they reach competency and proceed to the next unit. The competencies and materials in a particular unit are determined by the instructor in an editing table.

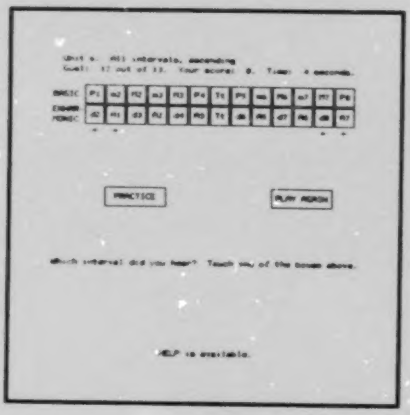
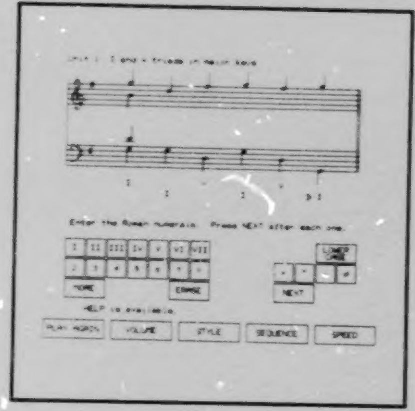


Figure 2._ Display from the Intervals lesson. (c) 1977 by the University of Delaware



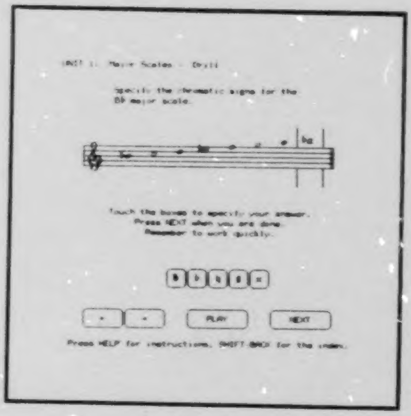
Enter the Roman numerals. Press NEXT after each one.

HELP is available.

Figure 3._ Display from the Harmonies lesson. (c) 1978 by the University of Delaware

Figure 3 shows a display page for a typical unit in the Harmonies strand. In this strand, after hearing a four-part chorale played, the student is instructed to write the bass and soprano voices as well as the Roman Numerals for the chords. With the "Volume" and "Style" options seen in Figure 3 at the bottom of the screen display, the student can make one voice louder than the others and change the style of the chorale so as to isolate one voice from the others through arpeggiation or voice delay. This can make the task of identifying the bass and soprano voices much easier. Other Harmonies options, such as "Speed" and "Play Again", are found in the other strands of the ear-training package. The "Speed" option allows students to control the speed at which the exercise plays. The "Play Again" option allows students to hear the exercise as many times as they wish.

Music Theory



UNIT 1. Major Scales - Drill

Specify the chromatic signs for the Bb major scale.

Touch the boxes to specify your answer.
Press NEXT when you are done.
Remember to work quickly.

Press HELP for instructions, SHIFT-BACK for the index.

Figure 4._ Display from the Scales lesson. (c) 1981 by the University of Delaware

The written theory component of the GUIDO Music Learning System consists of thirteen lessons. Two of the most important of these are described below. The music theory lessons, which were developed by the author, are used in a first-semester music theory course for majors as well as by students in a non-major music theory course. These lessons, like the strands for the ear-training courses, are used to supplement instruction the students receive in the classroom. Also like the ear-training strands, the competencies and other aspects of unit design are controlled by the instructor through a program editor.

In the Scales lesson, presented in Figure 4, the student must touch the boxes corresponding to the appropriate chromatic signs for the notes of a given scale. Where no chromatic sign is needed for a note, the student touches one of the "arrow" boxes on the bottom left side of the screen to move the window to another note. When the student touches NEXT, PLATO judges the student's answer. A student can touch the PLAY box at any time to hear the scale. The Scales lesson includes major, minor, and modal scales.

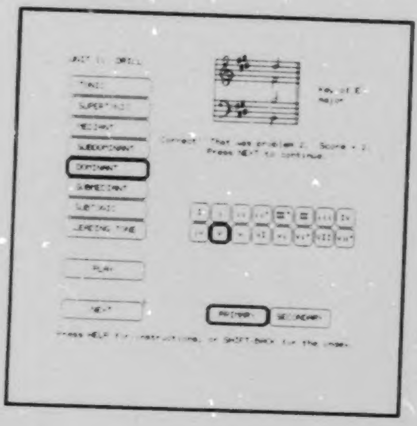

TONIC
SUPERTONIC
MEDIANT
SUBDOMINANT
DOMINANT
SUBMEDIANT
SUBTONIC
LEADING TONE
PLAY
NEXT
PRIMARY
SECONDARY

Figure 5. Display from the Diatonic Chords lesson. (c) 1982 by the University of Delaware

Figure 5 shows a screen display from the Diatonic Chords lesson. In this lesson, the student is asked to identify and construct triads and seventh chords in close and open position in terms of function or quality. Some units also ask students to identify scale degree names and chord inversions, and to tell whether a chord is primary or secondary.

Other music theory lessons in the series include: Pitch Identification, Octave Designation Identification, Half Steps and Whole Steps, Beat Units and Divisions, Rhythmic Notation Error Detection, Intervals, Key Signatures, Basic Part Writing, Bass Figurization, Transposition, and Partials.

Attitudes of Students regarding the GUIDO Music Learning System

In 1978, Professor Hofstetter conducted a controlled evaluation of the competency-based Intervals ear-training strand (Hofstetter, 1979). He divided his second-semester ear-training classes into two groups. One group went through the units in the Intervals strand in a sequential way. They received fifty items in each unit of the strand regardless of how well or how poorly they did on those items. The other group went through units that were competency-based. That is, the students in that group were required to attain mastery in each unit by answering the number required -- such as seven out of eight given in four seconds.

Table I indicates that the experimental group did significantly better than the control group on two of the more difficult types of interval dictation: descending and harmonic. Those results are shown in columns two and four of Table I. The t-test differences on those types of intervals were significant at the .05 level. However, data compiled from PLATO Student Evaluation Forms indicated that a much larger number of students in the competency-based group felt more frustrated while working on PLATO than did students in the sequential group. Also, a much larger number of students in the competency-based group than in the sequential group reported merely trying to get through the material rather than trying to learn it. Thus the competency-based approach, while resulting in more learning, also caused more negative attitudes toward the lesson than the sequential approach.

Table I

GUIDO INTERVALS PROGRAM POST-TEST SCORES

Student Group (N = 24)	Sub-Test Scores By Interval Types											
	Ascending			Descending			Mixed Ascending and Descending			Harmonic		
	Mean	Standard Deviation	t*	Mean	Standard Deviation	t*	Mean	Standard Deviation	t*	Mean	Standard Deviation	t*
Sequential Control Group (N = 12)	92	9.9	N.S.	85	13.2	p < .05	88	16.9	N.S.	81	15.1	p < .05
Competency-Based Experimental Group (N = 12)	93	6.1		95	8.2		94	4.2		92	6.6	

* = Test of Significance

As a result of this study, the competencies on some of the very complex interval units were made easier. Also, more attention was given to making sure that students understood what was expected of them in the PLATO classroom, and laboratories were introduced so that a human assistant could be present while students were working on their GUIDO ear-training materials.

Students in the music theory classes also evaluated the GUIDO music theory lessons using the same PLATO Student Evaluation Form used by students in the ear-training lessons. On the positive side, students reported that the theory lessons were preferable to traditional homework and that the lessons reinforced their classroom work well. They also reported that the lessons provided encouraging feedback to student responses. On the negative side, students indicated that more written assignments were needed in addition to the PLATO work and that some mechanism by which they could get tutorial help when they were having problems with the drills should be adopted. Finally, they commented on the physical conditions of the PLATO room which were detrimental to the learning process.

Student responses on the evaluation forms resulted in some changes. Students are now receiving a larger number of written assignments as homework than they received previously. A manual with some tutorial help is being written for students who may experience problems with the PLATO lessons. To improve the environment of the PLATO room, it was painted a lighter color and a partition, which blocked sunlight and impeded the flow of air conditioning in the room, was removed. To alleviate noise, students and programmers have been strongly urged to keep talking to a minimum while in the PLATO classroom.

New Developments in the GUIDO Music Learning System

The GUIDO Music Learning System is growing. Two new pieces of peripheral equipment will increase the capabilities of the system: a fundamental pitch detector and a music keyboard.

With the pitch detector, the student must sing into a microphone the notes which he or she sees on the PLATO screen. PLATO analyzes the fundamental frequency of each of the tones sung by the student and tells him or her whether the pitch is correct, sharp, flat, or altogether wrong.

The music keyboard has velocity-sensitive circuits. Thus, the keyboard is capable of judging the speed with which the student presses a note as well as which keys the student depresses. The keyboard will be used as an input device for the GUIDO ear-training and theory lessons as well as for class piano instruction and composition training.

The GUIDO Music Learning System has come a long way in its overall development. Continued advances in microelectronic technology, coupled with its decreasing cost, promise to make the 1980's a very rewarding decade as the pitch detector and keyboard are integrated into the GUIDO system.

Selected Readings

Arenson, M. A. "A Model for Systematic Revision of Computer-Based Instruction Materials in Music Theory," Journal of Computer-Based Instruction, February 1981, pp. 78-83.

Arenson, M. A. "The Use of a Table Driver for Individualized Design of Computer-Based Instruction Materials in Music Theory," Proceedings of the 1982 ADCIS Conference, Vancouver, British Columbia, pp. 228-230.

Arenson, M. A., editor. *National Consortium for Computer-Based Music Instruction 1983 Courseware Directory*.

Hofstetter, F. T. "Computer-Based Recognition of Perceptual Patterns in Harmonic Dictation Exercises," *Proceedings of the 1978 ADCIS Conference*, Dallas, Texas; also in *Journal of Research in Music Education*, Summer 1978, pp. 111-119.

Hofstetter, F. T. "Evaluation of a Competency-Based Approach to Teaching Aural Interval Identification," *Journal of Research in Music Education*, Winter 1979, pp. 201-213.

Hofstetter, F. T. "Applications for the GUIDO System to Aural Skills Research," *College Music Symposium*, Fall 1981, pp. 46-53.

PARTNERSHIP IN PROFESSIONAL DEVELOPMENT

Mr Mike McInerney
Mr John A McAleer
Dr Peter Whitehouse

Ulster Polytechnic
Northern Ireland

INTRODUCTION

The seminar dealt with the formulation of a means of providing for professional development through partnership. The ideas which we put forward for discussion arose in two ways:

1 Out of our experience in providing graduate and post-graduate courses for serving teachers.

2 Out of a conceptual analysis of the issues facing both tutors and students in such courses of study.

We believe that the approach which we have come to formulate has relevance beyond the area of teacher professional development. It is our view that this approach can be used to underpin a wide variety of professional development programmes.

The seminar was developed under the following headings and aimed at encouraging the widest possible participation by those present.

1 Consideration of the relationship between institutional structure and course design strategy.

2 Examination of Context.

3 Participation/Action Research.

4 Organisation of Provision.

1 CONSIDERATION OF THE RELATIONSHIP BETWEEN INSTITUTIONAL STRUCTURE AND COURSE DESIGN STRATEGY (John A McAleer)

In order to establish an overall framework for discussion we began with an examination of the relationship between institutional structure and course design strategy. These initial remarks attempt to sketch out some of the features of that relationship as they affect attempts at partnership.

The institution to which we belong is firmly embedded in the British higher education tradition. That tradition is reflected in the structure of the institution (faculties and departments), in its hierarchy, and its system of course approval. The tradition determines the ways in which most tutors think about course design, and provides the structure under which course provision occurs.

Individual departments are organised around a concept of distinct areas of knowledge or sets of such distinct areas of knowledge which have come to develop a common bond. The relationships within organisation units and between organisation units determine the basic strategy followed in the design of courses. Course design strategy is a function of internal organisation structure.

The nature of courses which emerge reflects not so much environmental factors which are changing but rather organisation patterns which are more or less fixed. Variations in provision reflect not various views of environmental factors but rather variations in organisation form as a result of internal negotiation processes. This configuration of elements can be illustrated as in Figure 1.

This figure attempts to conceptualise the interplay of organisational forces as they relate to course design. The vertical axis represents the institutional hierarchy, the chief responsibility of which is the distribution of resources. Resource distribution within complex organisations is accomplished through standardised procedures involving information transfer and negotiation. The horizontal axis reflects the distribution of areas of knowledge within the institution and these make an impact on the organisation through their knowledge claims. The interplays between resource distribution and knowledge claims constitute loci for course design within the organisation. When this configuration is set alongside the needs of professionals working in the wider community the courses which are produced are bound to reflect more the demands for harmony in the institution than responses to the needs of professionals working in the wider community.

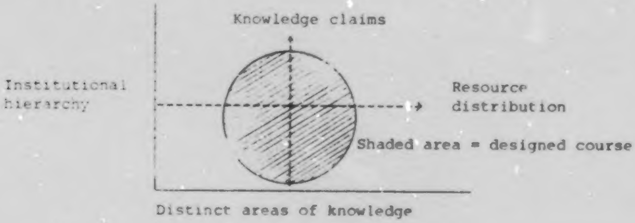


Figure 1

Courses so designed reflect the structure of the higher education organisation which generates them because that structure reflects "...not just scientific realities but also social institutions which define a sharing of knowledge or of power";[1] both of which have to be negotiated.

Even if institutions are more open than that which is depicted here, open in the sense that the total course package is not rigidly designed but rather allows for a range of elective units from which students can design their own package, the results are very much the same. This model of course design can be illustrated as in Figure 2.

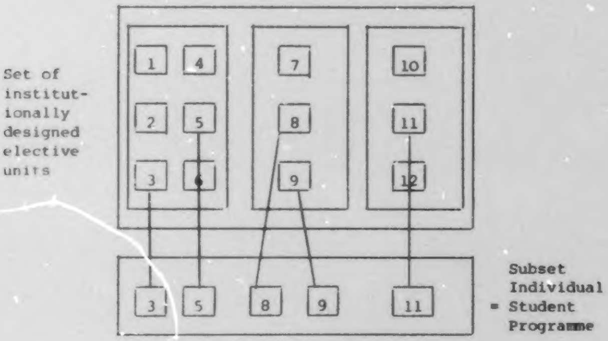

Set of institutionally designed elective units
1
4
7
10
2
5
8
11
3
6
9
12
3
5
8
9
11
Subset Individual = Student Programme

Figure 2

In this model parts of the response to the student's need are predetermined by the institution and its members. The structure of the institution, albeit open, still determines the final course design strategy within both models.

The student's professional needs are being determined at a level of abstraction from environmental conditions which presently shape the students' need. This abstraction is for the most part a rationalisation formulated to support the higher education institution's internal social reality.

It would be odd if students needs were not met in some way by such arrangements. Not even a higher education institution could be wrong one hundred per cent of the time. The degree of match between professional need and institutional provision when it occurs results more from teaching skill through tutor adaptation to in-class expressed need than through course design.

The case which we have argued here has been put forward succinctly by Chandler in reference to another dimension of activity when he says: "unless structure *follows* strategy inefficiency results".[2] That idea has been reformulated in a way which more closely expresses our own notion: "unless structure *matches* strategy inefficiency results".[3]

Course design in relation to professional development must in the first instance be based on an identification of the strategic task. We take that task to be the enhancement of professional practice for individuals in their work context. Not only were we designing a programme to fulfill that task but we were also attempting to modify the internal structure of our organisation in accordance with that task as a result of our understanding of the effects of structure on strategy formulation.

We wish to avoid generalising professional need or rendering it as an abstraction. It is that task which must be allowed to determine the underlying structure which supports the programme of study as expressed by practising professionals. This direction to course design must force institutions to evolve structures more responsive to the knowledge needs of the community.

> "Communities have problems
> universities have departments".[4]

To think in this way is to think about partnership with professionals and requires an examination of the following: (1) context; (2) partnership as participation; (3) pedagogy appropriate to the task; (4) structure appropriate to the task.

To think in this way is also to examine the nature of the relationship between centres of learning and the communities to which they belong. It is an attempt to reconcile the concept of a university as a service station with the concept of a university as a centre of analysis and objective criticism.

2 THE CONTEXT (Mike McInerney)

I want to begin by contrasting the relative order, economy, and consensus which characterise initial training for the professions with the absence of those qualities in large measure from the in-service or professional development scene. There can be few professions left whose new members did not receive their training in universities or other institutions of higher education. The tradition is centuries old in the case of the older professions like law, medicine, and the church. Others have followed suit in such numbers that very few professions can now remain whose new members do not derive through a higher education process. The process itself exhibits the smoothness of operation which normally goes with long practice. The main parties, that is, institution, student, and profession in its formal or legal embodiment, act within role models established through long usage so as to ensure an adequate flow of trained recruits, licensed to practice in virtue of formal qualifications granted by the institution and accepted by the profession and its clients.

We have not been able to discover any corresponding arrangement for the continued training and development of professionals embarked on their careers. Perhaps we have allowed ourselves to be more surprised by this discovery than we should. After all, initial training has traditionally been seen as providing a sufficient body of knowledge or skills to carry a person through his professional lifetime. It is likely that most professionals have always made some attempt to keep in touch with developments but their means of doing so have invariably been ad hoc and in any case they have seldom felt any pressure (and certainly no compulsion) to update.

The contrast between arrangements for initial training, and those for professional development, is particularly striking in the teaching profession. Government regulates the supply of new teachers, prescribes the duration of their training, and often much of its substance, and lays down the conditions under which they may be registered to practice. But once registered, the teacher is on his own. Or rather, he is faced with a bewildering range of courses, programmes, conferences, etc. All are charged with his professional development, or some aspect of it.

But what is he to make of it all? In an attempt to find a way through the jungle of professional development for teaching we undertook an examination of corresponding practice in some other professions. Our analysis has led us to highlight four problematical areas which in our view require priority attention if continuing professional development throughout a person's working life is to become a reality.

(i) There is frequently a mismatch between the needs of professionals and what the higher education institution is willing to provide.

"ADVANCING AND CHANGING TECHNOLOGY, JOB MOBILITY, INTERDISCIPLINARY RESPONSIBILITIES, AND HUMAN FORGETFULNESS DICTATE THAT ENGINEERS AND SCIENTISTS CONTINUE THEIR EDUCATION. YET THE TRADITIONAL EDUCATION PROCESS DOES NOT OFTEN ALIGN WITH OR FULFIL THEIR NEEDS."[6]
(PROFESSIONAL DEVELOPMENT DEGREE PROGRAM IN ENGINEERING, UNIVERSITY OF WISCONSIN).

(ii) The working professional is either employee or self-employed. Either way, he works for another, employer or client (frequently the public, or a section of it), who uses his expertise. The consumer or "user" of a person's professional services has a stake in his continued development and is entitled to influence its progress. How well adapted are higher education institutions with professional development programmes to take account of the needs of employers or of other "users"?

"THERE WAS WIDE AGREEMENT THAT EMPLOYERS SHOULD IDENTIFY THE NEEDS OF INDIVIDUAL MANAGERS AND CATER FOR THESE WITHIN AN OVERALL COMPANY TRAINING PROGRAMME".[7]

("MANAGEMENT TRAINING AND EDUCATION IN NORTHERN IRELAND": DEPARTMENT OF MANPOWER SERVICES 1982).

(iii) Financing of professional development activities leaves much to be desired, despite investment by the individual, employer, and Government. Where public or company money is channelled directly to the higher education institution, there is usually no demand to demonstrate the appropriateness of its programmes which can quickly become outdated and irrelevant to emergent needs. On the other hand, employer-run training schemes are likely to prove equally disappointing. The general picture shows that while a great deal of money, public or private, is laid out for professional development, the employer or other "user" can seldom intervene decisively so as to ensure that the sort of development which he wants actually happens. Perhaps the remedy is to strengthen the "users".

"AT THE MOMENT, GOVERNMENT FUNDING IS DISPERSED IN SUPPORT OF A RANGE OF UNRELATED OBJECTIVES; THERE IS DIFFUSION OF EFFORT AND OVERLAP OF RESPONSIBILITIES: THERE IS NO EVIDENCE THAT SOME PROVISION IS RELATED TO REAL NEEDS".

"GOVERNMENT GRANTS SHOULD BE CONCENTRATED ON USERS: THERE SHOULD BE...ECONOMIC CHARGING FOR THEIR SERVICES BY PROVIDERS OF POST-EXPERIENCE MANAGEMENT COURSES".[8]

("MANAGEMENT TRAINING AND EDUCATION IN NORTHERN IRELAND": DEPARTMENT OF MANPOWER SERVICES 1982).

(iv) Experience is the professional's most valued asset, and the most individualised. Yet the use made of it in his continued development is invariably minimal. Institutions aspiring to leadership roles in this area must take up the challenge of devising academic structures and procedures which enable students' experience to be drawn upon for the enhancement of their practice. This calls for new types of award-bearing programmes which postulate the practitioner as researcher into his own work experience and which aim at setting up a self-renewal process operative throughout his working life.

"THE LONG-TERM CHALLENGE MUST BE THE ESTABLISHMENT OF A FRAMEWORK OF SUPPORT WHICH WILL ALLOW TEACHERS TO CRITICALLY REFLECT UPON THEIR OWN PRACTICE AND...SUSTAIN THEM WHILE ...THEY ENGAGE IN INITIAL MODIFICATIONS AND REVISION OF CLASSROOM PRACTICE".[9]
"IN-SERVICE EDUCATION". DEPARTMENT OF EDUCATION FOR NORTHERN IRELAND 1982.

Like I said earlier, initial training for the professions is characterised by economy, order, and consensus. Those who survive its rigours are awarded the accolade of the providing institution. By contrast, most of professional development is ad hoc in character, emanating from several sources, uncoordinated and largely unplanned. To take teaching as an example, a teacher over a period of years might attend a succession of workshops, conferences (day and residential), short courses, seminars, exhibitions, lectures, demonstrations. Sponsors of these might include Government (ie Department of Education); employer (Education and Library Board); university, polytechnic or college of education; professional association or trade union; commercial supplier of educational equipment or materials; or enterpreneurial purveyor of knowledge and skills in current vogue, eg computing or communication. The aims and objectives of these events would bear no planned relation to each other, or to the teacher's professional needs unless he himself discriminated among available events on that basis. He could participate regularly and keenly during a working lifetime and yet be no better credentialed than the colleague who never took part.

We found this state of affairs unsatisfactory and set out to change it by bringing our work with teachers within the degree-awarding framework of our institution and thereby within the scope of its processes of academic planning and control. No loss of freedom was entailed here, unless one argues that a license to offer instruction with no institutional guarantee of quality counts as freedom. On the contrary, we would assert that any institution of higher education seriously committed to professional development has an obligation to extend the range of its own academic planning and control mechanisms, and its formal academic awards, so as to encompass joint action with other "users" in the enterprise. This is what we mean by partnership in professional development, and this is why our approach has taken the form of degree programmes (BEd and MSc).

I would like to conclude this part of the seminar by returning to the question of resources for professional development. There is no shortage of resources! True, they are badly distributed, frequently duplicated, and invariably uncoordinated. But a great deal of money, public and private (including the professional's own cash, because most of us are prepared to invest in our careers) is laid out every year and over the years this has amounted to a sizeable investment comprising training personnel, specialist accommodation, equipment and materials. The investment has many custodians and each will guard his own corner but our experience has been that an invitation to pool resources and expertise in a planned programme for the good of the profesion will evoke a warm response. Our work lies with teachers, but we believe our approach holds equally good for those who might work with any other group, be they engineers, managers, social workers or doctors. Put simply, we offer a partnership based on barter. As academics our trade goods comprise: a principle of professional development, that is action research; some expertise in the identification of individual and group needs and their formulation as courses of learning within the award-bearing programmes of our institution; and expertise in the teaching, assessment and evaluation of such courses. All these we offer in barter to those others in the field against what they can provide: teachers-as-students already recruited for our programmes; teaching accommodation and associated facilities: academic and non-academic support services like library and secretariat; some help with course planning and teaching. No money changes hands, nobody surrenders resources, nobody's autonomy is threatened. The various interests share, because everybody profits through the sharing. Perhaps it is fortuitous that we are six times more cost-effective than the standard alterantive.

3 PARTICIPATION/ACTION RESEARCH (John A McAleer)

It is not possible within the scope of the total seminar to give a detailed analysis of these two important asepcts of our programme. So this part of the seminar will only attempt to outline the basic features of our thinking with respect to participation and action research.

Participation

Figure 3 projects a simple model of the concept of participation.

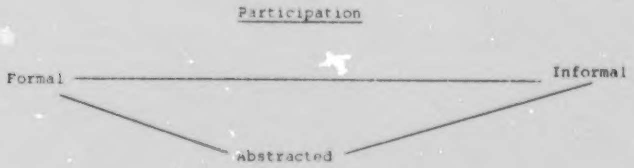


Figure 3

In this model we define formal participation as the expectation that one's views will be taken into account not merely allowed expression. The formal participation which we aim at guarantees to students a say in what they will study related to their professional concern. Formal participation is therefore a structural and systematic feature of our programme and is to be distinguished from informal participation of the type which arises naturally in classroom interaction. We wish further to distinguish our type of participation from all those forms of abstracted participation which involve representation and generalisation to group and individual concerns from selective sampling.

In our attempt to fulfil our aim a process of negotiation is called for involving members of the higher education institution and their clients. That negotiation process must not be of the abstracted kind, such as for example consultation with professional bodies. The negotiation process can range on a continuum from complex to simple. For example requests for updating on new technology are relatively simple, that is, easy to identify what is needed. On the other hand requests for evaluation of technology applied to work conditions in the community are extremely complex involving questions of appropriateness, cost, and social impact. It is the multi-dimensional aspect of professional knowledge which brings complexity to the negotiating process.

This approach to participation makes course design an integral part of student learning and professional development. Participation in the formal sense which we have defined puts students at the heart of the ideological debate about relevance. Underpinning this view is the notion that knowledge is not a consumer product but rather a unique way in which the individual contributes to the kind of world he/she lives in. It is our view that people have a right to make that judgement and not to have it made for them. My colleague will shortly outline the process which we have established in order to guarantee formal participation by students.

Action Research

In adapting action research as an approach to professional development we do not claim to be doing something new. As an approach it has been in use since the early fifties. However it is rarely found as a single methodology for an entire programme.

By the term we mean a form of participatory research carried out by practitioners into their own practice. It is the student's professional practice which becomes the focus of study. The claim which he/she makes about that practice become the subject of investigation. The approach enables students to research their own judgements of practice in ways which include scientific, logical, ethical and aesthetic values. They are required through public debate to substantiate the claims which they make by raising their actions from the level of mere private activity to a level of universal validity. This universality arises out of their own practice and context and is tested against that same context. The move towards action research in the field of education is predicated on the historical failure of educational theory to solve most of the practical problems which teachers encounter.

As an illustration of the approach the following example may be helpful. One of our students from a Belfast school expressed the desire to develop a community education syllabus. He was unclear as to what such a syllabus would look like. This, along with an uneasy feeling that such a syllabus might be unwelcome given Northern Ireland's divided school system constituted his practical problems. The answer to his problem lay in his own context and it was to that context that he returned. He developed a syllabus by studying the obstacles in that situation to the idea of community education. When he had unearthed the obstacles to a programme of community education in his own context he knew what such a syllabus ought to look like. The answer lay not in the first instance in a theory of community but rather in his own community's objections. From the explored context came the programme for his own school.

Finally action research does not set aside already generated theory but rather continues to test its application and implications according to scientific, logical, ethical and aesthetic values. We require students to study the methodologies of action research (systematically) so that they can investigate context and generate appropriate theory. In this way we think that students can develop knowledge appropriate to their community context.

It is our view that this methodology logically enables the concept of formal participation to be called partnership in professional development.

4 THE ORGANISATION OF PROVISION (Peter Whitehouse)

The sphere of our operation is Northern Ireland. There are six counties: Antrim, Derry, Tyrone, Fermanagh, Armagh and Down with a population of approximately one and a half million people. The centre of population is Belfast and towns adjacent to it; a second but lesser concentration is to be found in the north-west at Derry. Elsewhere the population is scattered and rural.

Educational provision in schools and colleges is administered by the Department of Education for Northern Ireland (DENI) and five Education and Library Boards. There are 17 Teachers' Centres around the province and two regional centres at Belfast and Coleraine.

The Ulster Polytechnic is situated north of Belfast in the borough of Newtownabbey. The Institution uses seven out-centres where the Faculty of Education's in-service BEd degree course for serving teachers is given. The Bangor out-centre is 18 miles from the Polytechnic campus. The others are further away, for example Craigavon 36 miles, Enniskillen 90 miles. There are 253 teachers enrolled on the in-service BEd in 1982/83, two thirds of them at the out-centres. (See Figure 4).

Our in-service BEd programme has been running since 1976. We have annually evaluated the programme during the seven years, our efforts culminating in the radically altered version of the degree to be introduced in 1983. Two considerations have underpinned our approach;

(a) the need for teachers themselves to determine the shape and substance of their own professional development, and

(b) the availability of providers willing to make a coordinated contribution to the process.

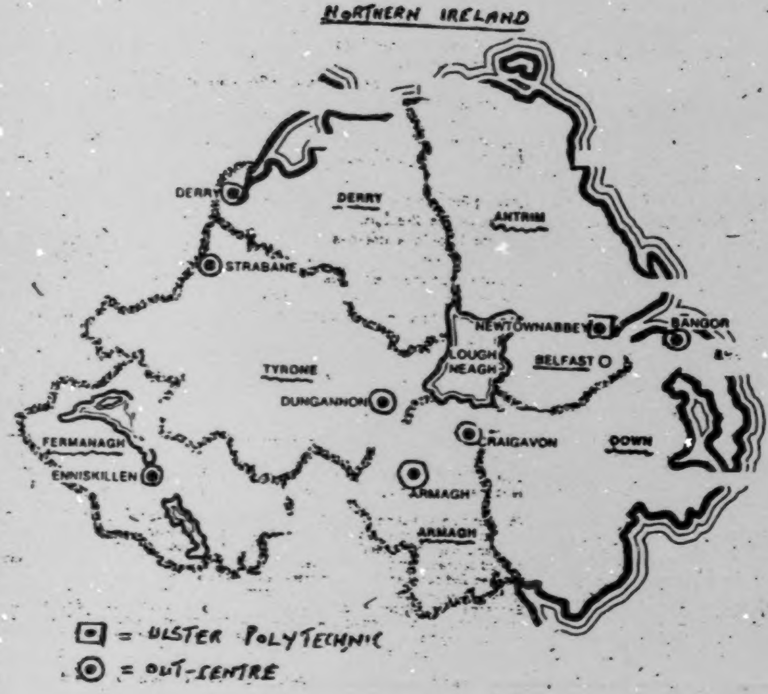

NORTHERN IRELAND
DERRY
DERRY
ANTRIM
STRABANE
NEWTOWNABBEY
BANGOR
LOUGH NEAGH
BELFAST
TYRONE
DUNGANNON
FERMANAGH
ENNISKILLEN
CRAIGAVON
DOWN
ARMAGH
ARMAGH
▣ = ULSTER POLYTECHNIC
◉ = OUT-CENTRE

Figure 4

The first of these two considerations, we feel, is of extreme importance. It led us to decide on the four principles that underpin our in-service BEd. Thus, the degree programme must:

(1) Be responsive to local needs.

(2) Allow freedom of choice of what should be studied.

(3) Promote an improvement in the quality of education in Northern Ireland schools and colleges through professional enhancement.

(4) Help the teacher develop professionally through constant research into his/her own classroom practice.

On the first of these two principles: before any particular degree curriculum is designed we enter into negotiations with groups of teachers (usually meeting them at a Teachers' Centre). We find out from them their immediate and long-term professional concerns. Concurrent with this process we are in touch with wardens of Teachers' Centres, Education and Library Board officers and advisors, and with members of the Inspectorate, in order to be informed by them and keep them informed of teachers' needs. The process - which takes place some six months before a particular curriculum is provided - defines for us two tasks:

(a) to design units of study that take account of the areas of concern articulated by the teachers, and

(b) to begin to organise the physical and human resources that are available from within the Polytechnic and other organisations and public bodies. Our initial negotiations can be represented diagrammatically as in Figure 5.

Initial Negotiations

(Principles 1 and 2)

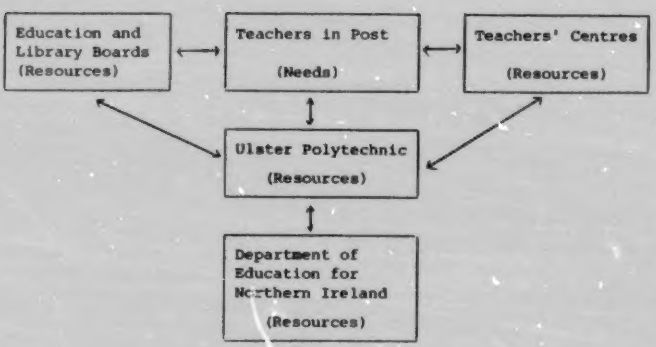

Education and Library Boards (Resources)
Teachers in Post (Needs)
Teachers' Centres (Resources)
Ulster Polytechnic (Resources)
Department of Education for Northern Ireland (Resources)

Figure 5

The curriculum of the first half of our new (1983 and after) BEd programme will reflect the areas of concern articulated in these preliminary discussions. The curriculum for the second half will arise out of a second round of negotiations (in Year 2, Semester 1) with those teacher participants who have enrolled on the course. As Figure 6 below shows, there are two occasions - before and during the programme - where we in the institution formally respond to teachers' needs as articulated by them. This formal response involves participation in the design of a programme which focuses on the areas of study chosen by teachers to meet their defined concerns. Moreover, since our discussions with teachers take place in their own locality, and involve other interested parties as well, the programme will necessarily reflect local needs.

Degree Framework

(Principles 1 and 2)

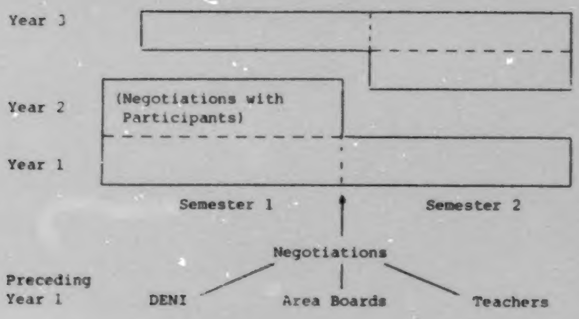

Year 3
Year 2
(Negotiations with Participants)
Year 1
Semester 1
Semester 2
Negotiations
Preceding Year 1
DENI
Area Boards
Teachers

Figure 6

I have mentioned that the Department of Education for Northern Ireland, the Education and Library Boards and the Ulster Polytechnic have human and physical resources available for in-service provision. This is where we invoke partnership among providers. Concurrent with our initial discussions with teachers on the content of the programme we negotiate with the Department of Education for Northern Ireland for provision of fees, travelling and subsistence allowances for teachers enrolling on the programme, and with the Education and Library Board for the use of a teaching centre, and a range of other locally available resources. A "teaching centre" is usually a Teachers' Centre, but it can be a school or college. Resulting from these negotiations a particular programme leading to the BEd will be given in a local Education and Library Board area where all facilities like teaching accommodation, workrooms, etc are available for use by participants on the programme. These arrangements can be represented as in Figure 7.

Location of Degree Provision

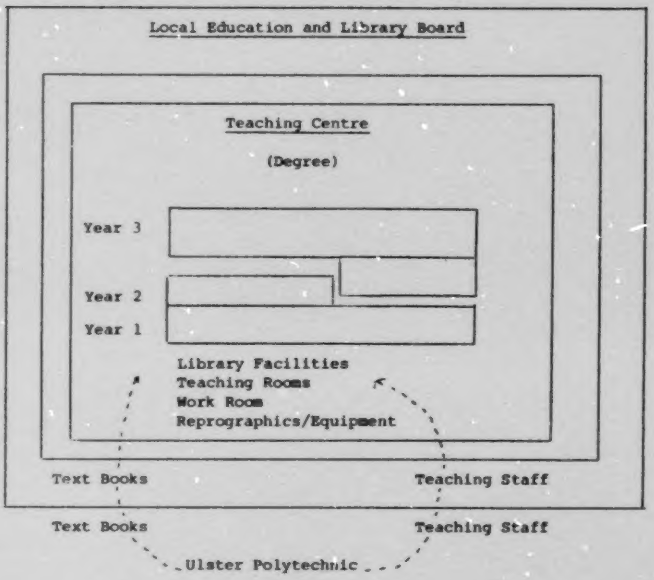

Local Education and Library Board
Teaching Centre
(Degree)
Year 3
Year 2
Year 1
Library Facilities
Teaching Rooms
Work Room
Reprographics/Equipment
Text Books
Teaching Staff
Text Books
Teaching Staff
Ulster Polytechnic

Figure 7

It goes without saying that each provider in this arrangement has something to gain from it. The Polytechnic fulfils one of its aims of catering to the needs of the Northern Ireland community by providing courses of study appropriate to those needs; the local Education and Library Board sees its facilities put to good long-term use and its teachers improving professionally; and the Department of Education sees an improvement in the quality of education in Northern Ireland schools and colleges being realised for a very small additional cost.

Having considered how we cater to real needs, allow freedom of choice, and enter into partnership among providers I want now to turn to principles three and four. Whatever teachers choose to study, the degree programme nevertheless contains three compulsory units in action research. The aim of these units is to help each teacher develop a habit of investigating his own professional practice in the classroom and the school.

Professional Enhancement in the Unit-Based
Degree Programme
(Principles 3 and 4)

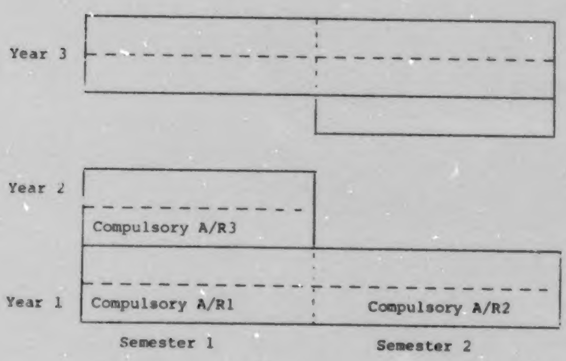


Figure 8

Apart from the three compulsory units in action research (and one further unit in other research methods for intending honours graduates) the teacher's freedom to choose areas of concern is exemplified in the elective units. There are nine of these. The three compulsory units and nine elective units make up the ordinary degree framework; the three compulsory units, an honours prerequisite unit and a school-based project make up the honours degree framework. (See Figure 9).

Freedom of Choice Through the Programme

(Principle 2)

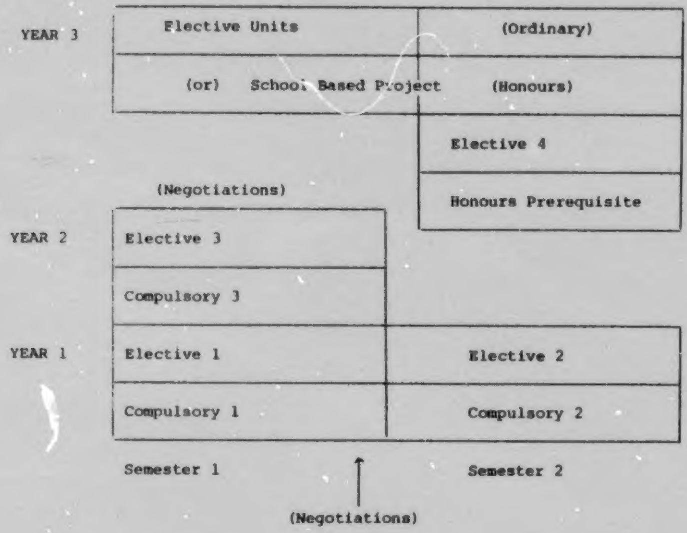

YEAR 3
Elective Units
(Ordinary)
(or) School Based Project
(Honours)
Elective 4
Honours Prerequisite
(Negotiations)
YEAR 2
Elective 3
Compulsory 3
YEAR 1
Elective 1
Elective 2
Compulsory 1
Compulsory 2
Semester 1
Semester 2
(Negotiations)

Figure 9

Each unit is of 30 hours contact time, and counts as one-twelfth credit towards the ordinary or honours degree award.

The unit is the crucial component in which all four principles of the degree are taken into account. For the duration of the unit, whatever concern he has chosen to study the teacher is expected to investigate its manifestation in his classroom or school, analyse the problem, plan and execute changes and evaluate the consequences. There is no written examination either for the unit or the degree. The teacher is assessed, in respect of each unit, through a special written study of his investigation. (Figure 10.)

Unit-Based Professional Enhancement and Choice

(Principles 1, 2, 3, 4)

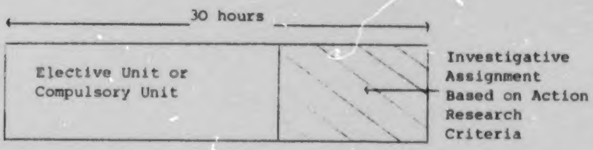

30 hours
Elective Unit or Compulsory Unit
Investigative Assignment Based on Action Research Criteria

Figure 10

The assignment is assessed by fixed criteria that take account of the teacher's developing research ability and effectiveness in making improvements. The same assessment criteria apply to every unit. They are, in brief:

First developmental level: the teacher's ability to give an accurate descriptive account of his professional practice and to identify practical issues.

Second developmental level: *in addition*, to be able to use the literature to illumine practical problems in the classroom.

Third developmental level: *in addition*, to be able to critically test theoretical explanations against reality and to formulate personal hypotheses.

A standard proforma is used for the design and presentation of each unit of study. This ensures that each unit is prepared according to the key criteria governing the degree programme. A unit of study is prepared under the following headings:

(i) *Title of Unit*: details of the area of concern articulated by teachers
(ii) *Location*: where the unit will be taught: the locality where the need is
(iii) *Dates*: when it will be given.
(iv) *Enrolment*: expected number of students
(v) *Clientele*: who it is for
(vi) *Rationale*: reason for it
(vii) *Short Syllabus*: a concise curriculum
(viii) *Resources Required*: the resources required in order to teach the unit
(ix) *Assignment*: the precise nature of the assignment
(x) *Provisional Scheme of Unit Evaluation*: definitive scheme to be agreed when the unit begins

(xi) Unit Tutor(s): the name(s) of the tutor(s) who has designed the unit and will be responsible for teaching it

(xii) Text Book/Article List: exact texts and articles to be purchased, plus required and recommended reading

(xiii) Pedagogy: teaching strategies for the unit.

We have a strategy and a structure for the design and validation of units to ensure that the four principles underpinning the degree framework are adhered to and that resource provision is forthcoming. In this there is a shared responsibility among the unit author, the in-service BEd course committee, the Board of the Faculty of Education and the Academic Board of the Polytechnic.

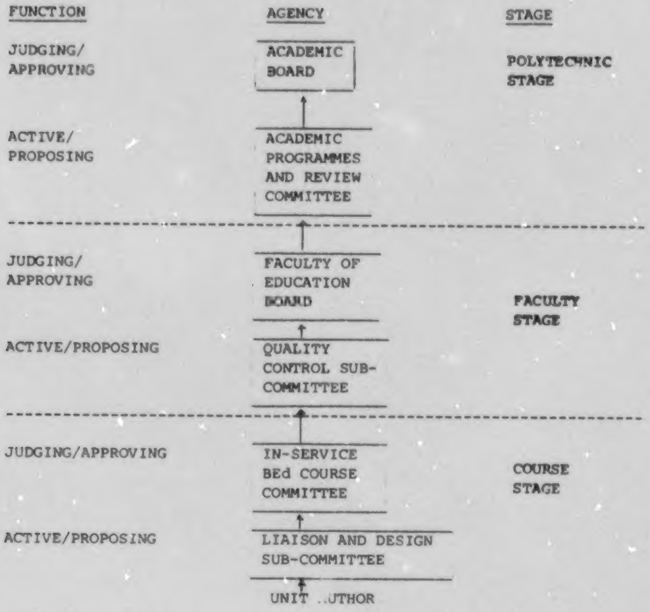

FUNCTION
AGENCY
STAGE
JUDGING/APPROVING
ACADEMIC BOARD
POLYTECHNIC STAGE
ACTIVE/PROPOSING
ACADEMIC PROGRAMMES AND REVIEW COMMITTEE
JUDGING/APPROVING
FACULTY OF EDUCATION BOARD
FACULTY STAGE
ACTIVE/PROPOSING
QUALITY CONTROL SUB-COMMITTEE
JUDGING/APPROVING
IN-SERVICE BEd COURSE COMMITTEE
COURSE STAGE
ACTIVE/PROPOSING
LIAISON AND DESIGN SUB-COMMITTEE
UNIT AUTHOR

Figure 11

While the procedure (Figure 11) may appear complicated it serves an essential purpose, that is, it enables the institution to satisfy itself that every aspect of provision detailed on the proforma is accounted for. The unit thereafter carries the institution's guarantee of quality through its inclusion in the award-bearing provision of the institution. The process goes through three stages and involves six agencies.

This process is not the end of the matter, however. Following the teaching of a unit the participant teachers themselves evaluate it in terms of its pertinence to their professional concern. Their evaluation is brought to the in-service BEd Course Committee by the unit author where it is carefully considered. The view of participants are thereby taken account of in any subsequent reissue of the unit, which in any case would necessitate its passage again through the validation process of Figure 11. In this way we ensure that the expertise available to professionals in the field is used not to dominate their practice but rather to serve their needs.

The management of a programme such as this is complex. There is the detailed role that the Liaison and Design Sub-Committee Chairman has; the interlocking responsibilities of the unit author with all committees involved in unit validation and evaluation; the computerisation of student profiles; degree units taken as short courses; and details of unit and programme evaluation. All these aspects must await another seminar session. In the meantime, I hope I have shown you how our four leading principles become embodied in a degree programme for professionals engaged in their daily practice.

REFERENCES

1 OEDC The University and the Community, Paris 1982 p127.

2 Chandler, A D Strategy and Structure, MIT Press, Cambridge, Mass. 1962.

3 Hall, D J, and Saias, M A Strategy follows Structure. Strategic Management Journal, Vol.1 1980.

4 OEDC The University and the Community Paris 1982 p137.

5 Ibid

6 University of Wisconsin-Madison, The "Professional Development degree program in Engineering", 1981.

7 Department of Manpower Services (NI) Management training and education in Northern Ireland" 1982.

8 Ibid.

9 Department of Education (NI) "In-Service Education", 1982.

THE DEVELOPMENT AND IMPACT OF EDUCATIONAL TELEVISION UPON UNIVERSITY TEACHING AND ORGANIZATION: A CASE STUDY APPROACH, UNITED STATES, UNITED KINGDOM, NORTHERN IRELAND

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Educational television has tended to develop in somewhat unique patterns within colleges and universities in different countries. College faculty have been provided with hardware, software, and learning packages. College computers have been wired to tie into national grid cable and relay systems. Attempts have been made to involve students and teachers in projects to define new modes of education. Faculty have utilized video and design software to shape and enhance the process of education.

The objective of this seminar was to acquaint participants with comparative, developmental information on how educational television technology evolved in three different university settings. These

* Chair

technology evolved in three different university settings. These intensive studies brought to light important variables, processes and interactions that can help participants generalize and hypothesize for further individual study. By determining what others are doing with similar problems or situations, the participants will be able to make future plans and decisions in their own countries.

A DESCRIPTIVE STUDY OF FACULTY ATTITUDES TOWARDS THE DEVELOPMENT OF INSTRUCTIONAL TELEVISION TECHNOLOGY IN SELECTED ACADEMIC SETTINGS: RUTGERS UNIVERSITY, UNITED STATES, AND ULSTER POLYTECHNIC, NORTHERN IRELAND

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INTRODUCTION

This paper will deal from the educators' point of view, with the findings of a descriptive case study of faculty responses to the development of instructional television technology in academic settings. A survey of the literature reveals little evidence of work done in this area of study. A questionnaire was distributed to faculty utilizing instructional televisional technology, within the framework of their courses, i.e., televisions, video-taping, in-class T.V. monitoring, etc., and non-users in departments and units at Rutgers University, New Brunswick, New Jersey, United States, and Ulster Polytechnic, Antrim, Northern Ireland, United Kingdom. In addition, interviews were conducted with persons involved in directing and coordinating instructional television departments. It is important to note that the institutions were in the midst of a massive reorganizational change. Both the faculty and curriculum were being affected by a decline in enrollment in certain disciplines, reduction in governmental funding and high quotas of tenured faculty in selected fields of study.

Instructional television facilities on both campuses have been widely utilized over the past five years. Each college had recently established an interdisciplinary group to study cable television development and the application of video communication within their individual settings. As a result of increased administrative activity to discern the relationships between the ongoing instructional television activities and the apparent need to further develop information age technology such as cable television satellite broadcasts and related video communication services, the faculty had become very concerned about their role and level of involvement in such activities. It became apparent that administrators would need to know, in addition, to the nuts and bolts of developing a highly technological communication system, such as video and telecommunication networks, the needs of the faculty, their involvement in utilizing current instructional television resources and facilities, what knowledge they can contribute to the development of curriculum programming, and how they perceived the new directions in educational technology being nurtured by forces both within and outside of the institutional setting.

As a general overview of a very broad topic, the major modes in which instructional television are being utilized at institutions of higher education include the following: (Cable Television and the University, 1974)

a) Broadcast -- Institutions may operate broadcasting stations in the VHF and UHF bands. Primarily, these relations transmit the resources of the university to off campus audiences through public television outlets. Programming typically includes instructional programming for the elementary and secondary school levels, programs of general educational career and cultural interest to the local community, and adult learners who are unable or not ready to attend college on a regular schedule - including housewives, displaced home-makers, disabled, and swing-shift workers.

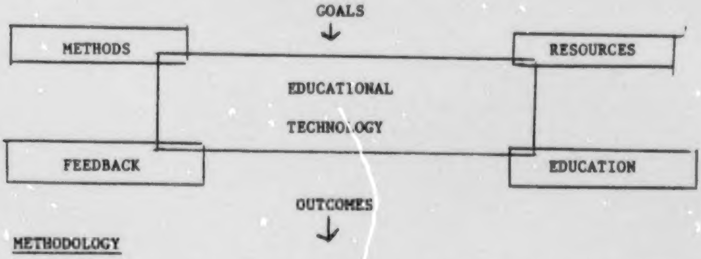
b) Micro-wave -- Although broadcast channels are by far the most popular mode, institutions may use a more specialized instructional television fixed service (ITFS) and micro-wave frequency bands to reach certain off-campus facilities that are equipped to receive such signals. Micro-wave networks may be utilized between colleges involved in consortial relationships to share institutional resources.

c) Closed Circuit T.V. (CCTV) -- This mode is probably the most popular in that regular coursework to on-campus students is converged through cable lines which may interconnect two rooms, in the same building, different buildings, or various campus facilities. In science disciplines, faculty have utilized CCTV within large, single classrooms to give students opportunities to experiment at close range.

d) Other Modes -- Portable video tape units or porta-paks, video cassettes and dial access video (system in which a student can dial up given titles from remote banks of stored video tapes) are considered local forms of T.V. services, but have been heavily used by faculty for supplementary instruction, micro-teaching and observation of teaching styles, learning shifts and related classroom interactions.

The institutions involved in this study utilized the services of their campus instructional units e.g., the Instructional Television Unit at Rutgers University and the Educational Technology Unit at Ulster Polytechnic, incorporating at least one of the modes mentioned above.

Although both units focused on utilizing educational technology to provide optional teaching and learning opportunities for faculty and students, the Ulster Polytechnic offered in addition to audio/video facilities for programming, equipment and technical guidance, other services such as teaching and learning resources, software utilization graphics, and photography. However, the feedback loops were similar. (Table 1)



METHODOLOGY

It seemed logical that any new computer communication initiative would have to be closely intervined with existing instructional television resources.

In order to ascertain views of the faculty to the increased on-campus activity to develop cable television systems and expand video communication, questionnaires were sent to departments/units in which faculty were users and non-users of instructional television technology units at their respective institutions. Although not all of the faculty in those departments/units had previous contact with the educational technology unit, it was assumed that faculty would have a thorough knowledge of their academic unit/department and would be able to provide an accurate descriptive account of prevailing attitudes and activities.

The samples were comparably small, 20 faculty at Ulster Polytechnic and 40 faculty at Rutgers University; so only tentative conclusions can be drawn, given the number of questionnaires completed and returned. Some of the faculty at both schools who did not return questionnaires were concerned about how their views might be interpreted by the administration inview of the reorganizational plans of the institutions. Some twenty questionnaires were sent to the faculty at Ulster Polytechnic and a total of fifteen were completed and returned. This represents a response rate of 75%.

Demographic data of the 15 participants in the Ulster study included 80% males and 20% females, 88% with terminal degrees and university teaching experience in a range between 1 and 25 years (with a mean of 9.2). The disciplines included history political science, arts, languages, drama, theatre, German, and social sciences, home economics, physics, physical education.

Forty questionnaires were sent to faculty at the Rutgers University campuses. A total of thirty-six were completed and returned. Demographic data on this group of 36 respondents revealed 80% males and 20% females, 93% with terminal degrees, and university teaching experience in a range between 2 to 16 years (with a mean of 10.5). The disciplines included music, art, english, geology, political science, economics, physics, chemistry, education, social work, criminal justice, anthropology, labor studies, counseling, psychology, and biology.

RESULTS

The result obtain from the questionnaires are given in TABLE II and TABLE III from the Ulster Polytechnics respondents and TABLES IV and TABLE III from the Rutgers University respondents. (see attachments, pp. 10-14)

In addition to the results presented in TABLES II, III, IV, and V, one other question was included in the questionnaire. This question asked for "any additional comments or suggestions related to instructional television technology on your campus". Comments in this area center on the following themes:

a) Institutions need to change how faculty performance is evaluated.

Also, criteria for measuring students' progress may have to be reassessed if teleconference courses were instituted on their campuses.

b) The pay scales of faculty members should be adjusted to compensate for time spent in developing better and different teaching strategies.

c) A number of respondents felt that the institution was going to push video communication networks on faculty members whether they liked it or not.

d) A few respondents felt that instructional television services should only be used by those faculty who had an interest in participating in such activities.

e) Other faculty members felt more staff development was needed to acquaint faculty with occurrences in the areas of educational technology.

DISCUSSION

The overall impression given by the respondents from both campuses on the various items in the questionnaire is that a large proportion of the faculty were uninformed of the current potential and utilization of educational technology in terms of telecommunications and related video communication systems. Localized modes such as porta-paks, and cassettes for micro-teaching, counseling, psychology seminars, and other forms of self-observation were being used by the faculty. However, only a few of the faculty members were involved in closed circuit T.V., CCTV or broadcasting. Perhaps this was due to limitod campus facilities in this area.

In terms of instructional television as a vehicle to delivery content knowledge, the Ulster Polytechnic faculty were involved in creating video tapes in the fields of home economics, physics, environmental studies, physical education, drama, and language studies. The Rutgers University faculty tended to utilise instructional television resources as a support system to classroom lecture and field work. More established faculty at both institutions utilised television facilities for such purposes to a lesser degree than newer faculty in all fields of study.

The faculty at both institutions were very concerned about the lack of communication between faculty and administration, although interdiscipline committees were operational. They were most concerned that the use of audio and video communication systems were not built into the process for promotion and tenure. Several faculty commented on the fact that no incentives were given by administration for faculty to become involved in technological innovations. The most promising primary finding of the study, however, was the receptiveness of the instructional television media department to support the faculty in their endeavors. The implications for institutions of higher education seems to imply a need to involve the faculty more in the process of policy-making in the field of video communication, to propose ventures in cable television, and to seek support for campus-based projects from government, industry, and commercial networks. Cooperative efforts with public television may include areas such as alternate delivery, expansion of services, co-production, facilities sharing, or joint ownership.

NOTES

1. Cable Television and the University, Conference Proceedings, Edu Com., Educational Testing Service. Cable Television Information Center of the Urban Institute. 1974.

2. Carlise, Robert D. Media and the Adult Student : One Man's Journal. Lincoln, Nebraska : Great Plains National Instruction Television Library. 1976.

3. Grossman, Lawrence. "Coming Together Public Television and Higher Education" National Television Conference : Managing the Adult Learners. 1982.

4. Krevisky, G. "The Uses and Abuses of Television in New Jersey" New York Times. February 7, 1982.

5. Mahoney, Shelia. et al, Keeping Pace with the New Television : Public Television and Changing Technology. New York : Carnegie Corporation. 1980.

6. Office of Technology Assessment. Information Technology and It's Impact in American Education, Washington, D.C. Government Printing Office. 1981.

7. Oglesby, W. "12 Nation Study Technology in Education : South Carolina Three Year Project." Education Week Vol 2. No. 9 November, 1982.

8. Rippen, Robert. Interview. Coordinator of Academic/ Institutional Television Support Systems, Rutgers University. 1983.

9. Wilkerson, George, Educational Technology : STAFF Faculty Handbook - Ulster Polytechnic. 1981.

10. Wilkerson, George. Interview. Head Educational Technology, Ulster Polytechnic, Antrim, Northern Ireland, United Kingdom. 1983.

TABLE II Results Obtained from Questionnaire: Ulster Polytechnic

Questions asked, and responses given (to nearest %)	Alternative Responses							
	Great Need	Very Much	Good Need	Somewhat	Fair Need	Not Much	Not At All	Don't Know
1. How would you assess the need of Colleges/Universities to incorporate instructional TV into their courses of study?	3		94		3			
2. How would you assess the need of your department/discipline to incorporate TV into the curriculum?	35		60				5	
3. How would you assess the need of your institution to make a commitment to the development of cable television technology?	60		30		10			
4. How do you think I.T.V. (Instructional Television) would improve the "quality of instruction" for students on campus?		62		38				
5. How do you think I.T.V. would improve the "quality of learning" on campus courses?		40		40		20		
6. Do you have a clear understanding of the issues and trends of I.T.V. Technology?				30		25	45	
7. Do you consider I.T.V. technology a threat to your job security?				20		70	10	
8. How do you think I.T.V. technology will increase capital expenditures for colleges and universities?		30		70				
9. Do incentives for faculty program development exist at your college/university?						60		40
10. Should facilities for I.T.V. currently exist at your college/university; are they readily accessible to you?		60		30		5	5	
11. Have you ever utilized I.T.V. technology as an educational delivery system?		40		30		20	10	
12. Have you ever seen I.T.V. technology used in the college classroom in any form?		60		20		10	10	
13. What factors may effect the successful development of I.T.V. at your college?								
14. How might college and universities make I.T.V. cost effective?								

TABLE III Results Obtained From Questionnaire: Ulster Polytechnic

	Questions Asked and Responses Given (overall rank)	
	Rank the factors which may effect the successful development of I.T.V. technology at your college with 5 for most effect.	Rank how colleges and universities might make I.T.V. technology cost effective with 5 for most effect.
1. Promotes distance learning with multi-campus operations	5	
2. Supplements classroom teaching	1	
3. Initiates investment in capital improvements	4	
4. Development of consortial relationship between institutions	3	
5. Faculty involvement in programming	2	
1. Retraining of current faculty		2
2. Focus on staff specialization		1
3. Reduce staff and student contact time		3
4. Government support of educational technology projects		4
5. Time and cost sharing with commercial networks		5

TABLE IV   Results Obtained from Questionnaire: Rutgers University

Questions asked, and responses given (to nearest %)	Alternative Responses							
	Great Need	Very Much	Good Need	Somewhat	Fair Need	Not Much	Not At All	Don't Know
1. How would you assess the need of Colleges/Universities to incorporate instructional TV into their courses of study?	12		70		16		2	
2. How would you assess the need of your department/discipline to incorporate TV into the curriculum?	30		52		8		10	
3. How would you assess the need of your institution to make a commitment to the development of cable television technology?	66		32		2			
4. How do you think I.T.V. (INstructional Television) would improve the "quality of instruction" for students on campus?		73		27				
5. How do you think I.T.V. would improve the "quality of learning" on campus courses?								
6. Do you have a clear understanding of the issues and trends of I.T.V. Technology?		5		45		20	30	
7. Do you consider I.T.V. technology a threat to your job security?		10		40		50		
8. How do you think I.T.V. technology will increase capital expenditures for colleges and universities?		30		40		20		10
9. Do incentives for faculty program development exist at your college/university?						70	20	10
10. Should facilities for I.T.V. currently exist at your college/university; are they readily accessible to you?		50		30		20		
11. Have you ever utilized I.T.V. technology as an educational delivery system?		40		25		25	10	
12. Have you ever seen I.T.V. technology used in the college classroom in any form?		55		20		10	15	
13. What factors may affect the successful development of I.T.V. at your college?								
14. How might college and universities make I.T.V. cost effective?								

TABLE V Results Obtained From Questionnaire: Rutgers University

	Questions Asked and Responses Given (overall rank)	
	Rank the factors which may effect the successful development of I.T.V. technology at your college with 5 for most effect.	Rank how colleges and universities might make I.T.V. technology cost effective with 5 for most effect.
1. Promotes distance learning with multi-campus operations	3	
2. Supplements classroom teaching	2	
3. Initiates investment in capital improvements	5	
4. Development of consortial relationship between institutions	4	
5. Faculty involvement in programming	1	
1. Retraining of current faculty		1
2. Focus on staff specialization		2
3. Reduce staff and student contact time		3
4. Government support of educational technology projects		4
5. Time and cost sharing with commercial networks		5

PROSPECTS FOR THE DEVELOPMENT OF VIDEO AND EDUCATION IN GREAT BRITIAN AND NORTHERN IRELAND IN THE 1980'S

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Ulster Polytechnic
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A. The Hunt Report on Television in the UK

The United States is served by numerous network and cable television stations, for the most part commercial, but in some cases public owned, non-profit or the adjunct of an educational institution. At present in Great Britian and Northern Ireland, there are only four television stations. A part government, part commercial monopoly exists. It would be illegal, for example, for a college or university to broadcast even a mile or two outside the domains of its campus (either television or radio). Thus the proposed legalization of 40-50 cable television stations in the UK in the mid 1980's is of great significance. It has great implications for the development of sophisticated uses of video education.

In October of 1982, the Hunt Committee Report, a policy paper on cable expansion and broadcasting policy in the UK advocated the creation of a large-scale cable television system. The Report outlined a plan for the first stations to come into being by the mid 1980's with the prospect of 40-50 stations by the end of the decade in both tree, branched and star switched configurations, and broad band utilizing optical fibre. Every station in the system would have a capability of 25 downstreams 8 MHZ video channels, at least one return audio visual channel which might be used for a range of services (interactive or teletext data), two way data channels with a high definition signally rate of 80 K bits/second, and provision for more than one subscribe to have simultaneous access to the return video and two way data channels.

Most important from the point of view of educators, Hunt advised that the new system tally utilize its two-way of interactive communication capability to serve a wide range of local, community and public needs:

> "Apart from carrying. . . basic services (existing BBC and Independent Television transmissions) cable television should be different and should greatly widen the viewer's choice by providing many additional channels for those people ready to pay more than their basic license fee. Because financing and other consultants will limit the geographical area of any one cable system, it should be responsible to local demand. Assuming, however, a system with more than 30 channels most packages would normally comprise three distinct sections: first, the 'must carry' broadcast services referred to above; second, some interactive services of benefit to business and the consumer; and third, a larger range of channels providing

> such programs as sports, films, arts, continuous news, education (including the open university at convenient times), childrens' features, hobbies, health, games and locally derived programs whether they be community affairs, ethnic, local/arts or channels providing access for local people to make their own programs." (Hunt Committee Report, p. 3)

On the date of its publications, a lead editorial in the Financial Times focused on the democratic implications of the Hunt Committee Report for education and communication is general.

> "The advent of wideband cable systems, which provide channels capable of two-way communications, opens up far reaching possibilities. As well as entertainment, cable would bring out new ways of working, better facilities for education and training. . . together with scope for rapid communication between. . . educational establishments and libraries." (Financial Times, October 13, 1983, p. 22)

B. Video and Education: New Visits

Advances in technological development often have democratic and humanistic potential. Recent innovations in video technology brought to the people a developed cable network system which could serve the needs of educators in a number of functional and creative ways:

1) The establishment of data banks for teaching and research. This could take many forms. The establishment of new video libraries as well as a system of open access to libraries and archives within the UK or between the UK and the rest of the world. This would allow a scholar to examine material currently housed at a great distance, or a teacher to have access to original documents or images and to be able to call them up on a video monitor during a lecture: for example, an original manuscript, letters of historical impact, a first edition of a classic text, government papers, a sculpture in its original setting, etc.

2) The creation of video chains for distinguished scholars and teachers. Through a cable network teachers and scholars in most any field could, with little inconvenience, deliver lectures to students in other parts of the country or to students in other nations. Given the development of interactive or two-way video networks, they would easily participate in tutorials, direct seminars or simply be available in their video office for discussions with students in any part of the country or world.

3) The enhancement of the use of video as both a mode of analysis and communication in academic research and publication. Currently, many areas in field research that focus on complex processes of interaction (involving both verbal and non-verbal signification) are presented in written form on

the basis of written research data (what has been observed paraphrased in written discourse). In many cases, it would make more sense to conduct an analysis of the process of the development of play production or of a television program, the formulation of political policy in a government committee, and of interaction and conflict between workers and management on the shop floor to proceed not only on the basis of video data but to be presented in a video format. It would introduce a new form of dissertation or publication. The enhanced use of interactive video in education will likely spur the development and acceptance of a corucopia of new modes of technology, research, inquiry, and publication.

4) The enhancement of public of public education -- the spawning of a variety of open, interactive, free video universities and cultural centers.

C. Matters of Social Policy

Whether or not a new technology is utilized in a rational creative, democratic and life-enhancing way is in the final sense not determined by the technology itself, but, what sort of social priorities shape its development. In April 1983, six months after the Hunt Committee Report, the British Home Office issued a Government White Paper that outlined in detail the ways that the Thatcher Government was seeking to develop cable television in the UK. While the general thrust of the Government's plan for the development of cable services and systems was bullish, its pronounced bias in favor of big business as expressed in the Government White Paper could limit the potential for growth of educational and public access television.

> "The Government also proposes to exclude from any stake in the ownership of the (cable television) system any organization which appears to be of directly political character, and any individual who would seek to use his position in order to favor a particular political or religious clause. The Government believes moreover that central and local government ought not to participate directly in the ownership of cable systems. With these exceptions any company, including existing telecommunications organizations as Bell Telephone and Mecury and companies with other media interests, will be free to obtain a license as a cable provides." (Government White Paper, p. 30)

At first glance, the discourse may appear libertarian, but it is exceedingly and selectively restrictive. Bell Telephone (the British equivalent of AT & T), Mercury (a consortium of the Barclay Bank and the Shell Oil Company) and any other company or business - presumably free of any political interests - may own or sponsor a cable television station. However, a local government or municipality (for example, the Greater London Council, i.e., the British equivalent of the New York City government which has been a pioneer in public service radio and television) or a trade union are prohibited from operating a cable television station but the Labor Party may not. None of these restrictions apply at present to other areas of British media - to newspapers either national or local, to book and magazine publishers. It is perhaps a tribute to the democratic and pluralist potential of cable to provide a voice for minority and oppositional cultures, and to provoke debate and influence public opinion, that the Conservative Government so overly seeks to restrict and regulate its development.

> "Even with a large number of channels cable systems will not, for the foreseeable future, offer the same unlimited possibilities for the expressions of opposing viewpoints as the written word. To see cable as a kind of electronic magazine rack and thus to argue that cable should be subject only to those restrictions of the minimal and civil laws which apply to publishing generally is, at the very least, premature." (Government White Paper, p. 58)

It is unfortunate that the recent Government White Paper and cable television is so imbued with the philosophy of commerce, and so hostile to the process of free debate of opposing (hence, at times oppositional) viewpoints which is an important aspect of the process of education. For commercial societies institutions of public service most often arise as a consequence of social policy. It is to be regretted that the Tory Government have set out guidelines which under the guide of laissez-faire will actively discourage the development of public access and educational television.

> "Nor does the Government propose that the Cable Authority should be required to impose on cable operators specific obligations to provide services for minority and specialist interests. For example, it has been suggested that channels should be removed for a variety of reasons including education, community access, local authorities, the deaf and Christian organizations. The Government's view, however, is that it would be unwise to infuse in the legislation on cable operators any obligation to reserve channels for particular uses. . . (Government White Paper, p. 65)

I have attempted to identify two trends in the development of cable television in Great Britain and Northern Ireland and note the implications for the use of videos in education. Most likely, the prospect for enhancement of creative use of cable, teleplay and video in education will be related to the general thrust of social and academic policy in the UK in the 1980's.

THE IMPACT OF TELEVISION ON TEACHING IN HIGHER EDUCATION IN THE UNITED KINGDOM:

DEVELOPMENT AT ULSTER POLYTECHNIC

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Video production as a potentially significant contribution to teaching surfaced after the Brynmor Jones report (1965). This report advocated and won significant allegiance to the belief that audio-visual communication technology could add a new dimension to teaching in higher education. However, certain conditions occurred as aspects of the report was implemented. The services were conditioned by and based on simplified versions of mass-media facilities. Personnel were sometimes recruited from broadcasting staff with little awareness of the academic life of teaching and research. The cultural differences between the television staff and the teaching staff created serious problems as recorded elsewhere in similar situations (Lee 1971). The services were offered on a "cafeteria basis" to faculty with the assumption that teachers would want to utilize the technology. As a result of unawareness and insensitivity about the problem of "interfacing" with existing teaching, capable, and useful resources languished. Other than a small number of enthusiasts, the initiatives generated by the report has not made a comprehensive impact on teaching practices and learning outcomes.

Generally, television services in the Polytechnics have been offered on a different basis. In some of the Polytechnics, television resources have been a part of a more extensive services designed to influence course design, teaching procedures and student learning practices. Staff working in this broader area found it easier to relate to teaching staff because some of them had backgrounds in teacher training, psychology, or sociology, and taught part of their time. However, the impact on teaching practices has not been marked. Working under the umbrella of educational development, the dichotomy between the development staff and teaching staff has not been so apparent, therefore, allowing sound but slow progress.

More specifically, the development of educational technology at Ulster Polytechnic have not been developed as a result of a general policy or belief in the far-reaching significance of television production in either the teaching or learning role. Hence, resources become available sporadically in response to isolated and well-tried initiatives. However, staff at the Ulster Polytechnic has focuses on performance analysis. One early use of television was recording of performance events by students with analysis of the performance through video-recorder playback. A Social Skills Unit has now seven sets of paired rooms. One room houses the performance event which could be interviewing, counseling, or teaching skills. This is recorded by an overhead camera. The adjacent room provides playback and viewing facilities via a video-recorder and large monitor. A similar more portable and flexible set of units have been used in Business and Management training.

It is important to note, however, that staff video production has functioned in the following ways. The production of video programs has never been at a significant level because of the length of time required for production and to some extent, expertise required to produce satisfactory programs. Attempts to expedite program production of simple programs to guide experimental procedure in the laboratories was refined to produce a program in half-a-day. The number of programs produced did not significantly increase as a result of this. The staff time required to produce video programs has clearly been in competition with research, administration and teaching time.

Over the years, student production has focused on bringing the outside in and singular events. Recent years have seen a significant increase in the number of students (either as individuals or groups) deciding to produce video programs as significant components in their projects or dissertations. Staff have been cooperative in facilitating these activities; hopefully, this indicates support of video production although they may not have personal time to engage in it. However, some external examiners have refused to agree to video productions as essential or even significant components in certain student submissions. There appears to be some reluctance to accept video programs as having the same academic rigor and creativity as written submissions.

Certain courses are laboratory based which facilitates the integration of theory and practice. Other courses such as quantity surveying, estate management or town planning do not have such opportunities. Video recordings have proved to provide as keen learning experiences as the product itself; visual acuity and awareness have been enhanced along with specific aspects of visual literacy. Even within laboratory-based subjects, video programs enhance and relate course activities to vocations such as Environmental Health Inspection.

Often events are singular, expensive, and unlikely to be repeated. If these can be video-recorded the advantages are obvious. If recorded on site, often only one camera can be made available, adequate lighting may be impossible and sound presents difficulties. If the event can take place in a TV studio, three or more cameras can emphasize different aspects; lighting and sound can be uniform and consistent. Planning appeals, drama productions, and board room procedures have been recorded in this way. This provides recapulation on specific points as required. Such recordings cannot be precisely scripted but a list of likely sequences can help cameramen to anticipate required shots.

Most often, the educational technology prepared at Ulster Polytechnic has focused on community uses and open learning. Meeting community needs is an important objective of the Polytechnic. Certain opportunities have arisen in which video technology has contributed to the outcomes. Courses have been in progress to meet the needs of the unemployed. Each courses has had one or two days of video-production work. While the detailed outcomes have yet to be unravelled, there is evidence that appearing before cameras and using the "new" technology on the other side of the camera has contributed to self-esteem, morale, and in some cases, a new interest. Some participants have continued to work with the Unit as a result of interest or vocational prospects. As a contribution to a "young people at risk" project, the potentials of video are being explored in facilitation peer-communication and promoting an interest in technology. With the young people, there was a marked contrast between the easy facility with the equipment and the stilted and monosyllabic peer-communication. Lack of success in traditional modes of communication, based on symbolic rather than iconic media, has probable contributed to the alienation and aggression frequently encountered with such young people. There is research work with immense potential to be tackled here with a distinct possibility of a newer easier medium of communication for some of our young people. Work in recording local community festivals and fetes has indicated the need for community associations to have video facilities. Such associations need to ascertain their video needs and define the minimum facilities to meet these needs.

In regard to open learning, the possible contributions of video recording to distance in the Polytechnic has already described elsewhere (Wilkinson and Baum 1980). At outcentres for teaching, it was demonstrated that video recordings could contribute to interactive teaching events. At this moment, the contribution of video to linking four newly merged campuses is being explored. Here the objective is to provide as full audio-visual interactive connections as possible subject to resource and financial limitations.

An interesting effect of education technology at Ulster Polytechnic has been the use of video in research. With the increasing portability, flexibility, and accuracy of the video equipment, its use in recording research events has increased. Very often the recording of such research events stretch the technology of the equipment to record video in difficult conditions such as high temperatures, inaccessible viewing points and interviewing barriers on vision and sound such as glass or high ambient sound level. The Unit has grappled with such problems as:

a) Close-up shots of deterioration of stone bridges.

b) The colors of Siamese fighting fish through glass and murkey water.

c) High speed extrusion of plastic.

d) Close-up patterns of movement of short pieces of cloth on buses traveling at speed. The buses were being tested for streaming contours.

e) Close-up work in video and sound of a hockey coach moving randomly about a hockey pitch.

f) Close-up steady pictures of a road surface from a conventional vehicle traveling above a minimum speed.

and so on. Such events when successful, increase the appreciation of Unit video facilities and expertise; unsuccessful attempts have negative affects hence decisions have to be made in relation to chances of success.

It is clear that there is a need to recognize the potential if under-production. Computer technology with is impact on commercial cost effectiveness has risen to a high level of public awareness. On the other hand, video technology despite its immense creative communication possibilities, has remained at a level of entertainment. With its potentials for easy direct communication in a new mode, it is surprising that the reate of development has not accelerated past watching programs from a video recorder. The general use of video cameras by the public is at present little beyond the stage of cavewriting. As soon as the technology and expertise in its use moves towards acceptable quality, growth will be more marked. In Northern Ireland, commercial firms offering video production has increased tenfold in the last number of years. There would appear to be the beginning of a significant new service industry with all the possibilities for employment. Educational exploitation and development will follow, as usual, some years behind.

REFERENCES

1) Brynmor Jones Report (1965)

University Grants Committee, Department of Education and Science,
Scottish Education Department;
Audiovisual Aids in Higher Scientific Education
London, H.M.S.O.

2) Lee, J. (1971)
Test Pattern. University of Toronto Press

3) Wilkinson and Baum (1980)

"The use of Out Centres as a means of alleviating problems of
teaching at a distance from the Ulster Polytechnic."
from "Learning Beyond the Classroom"
Report of the 17th Conference on Education Development in
Polytechnics.
SCEDSIP.

COMMUNITY PROJECT - DONEGAL - A CASE STUDY

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Community projects have been a feature of the work of this Department since the mid 1960's. In the early years a number of large towns, Kilkenny and Wexford for instance, were undertaken as projects by the senior year of the Course. Later projects largely consisted of smaller towns, mostly in the South and West of the country and in areas where no comprehensive planning Department existed in the Local Authority.

Projects are usually commisioned by local Community Groups, Residents, Chambers of Commerce etc. and it is expected that the expenses of the project be funded by the local groups. This funding can take various forms, a straight cash grant to the organizer of the project, or more usually as a combination of cash for certain expenses with accommodation being provided by the local community. This takes the form of housing students and staff in various houses in the community or in a local hotel or guesthouse. The aim of the project is to produce an audit of architectural heritage items, architecture or landscape and this is usually also accompanied by a development plan for the future.

The academic objective of the project is to provide the student with a learning experience in a real life situation. The students experience the problems of team work. A team leader is selected and the project team breaks up into smaller groups for the field work and later for the drawing up of the proposals. One week is usually spent in the field and six to eight weeks for developing the proposals.

The difficulties of reconciling theories of planning with the practical desires of the community is realized in everyday contact with the inhabitants. The complexity of the interaction of local politics is often a salutary pre-professional experience. The students engage in the project work for the final term of their 4th year and this therefore coincides with the professional practice lecture programme.

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Local meetings are attended by the students and staff and the final project drawings are presented at an exhibition in the town. The exhibition usually has very large attendances by the community and the type of presentation is choosen for the purpose of making the proposals easily read and understood by ordinary people rather than available only to professionals.

The benefits of the projects are various. The local community benefit by the contact with cheerful, enthusiastic and idealistic young people. Local Heritage is appreciated and kite flying exercises by the students for future planning encourage a more sympathic and broader dialogue between the local planners and the people. The friendly, co-operative and appreciative attitude of the local people to the students give them a feeling of self-esteem and the knowledge that thair work is useful.

Community Projects are felt to be a bridge between school and the working world.

Issues in University Organization

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In the group on university organization we had a great deal of discussion and some very animated debate. I am going to try to briefly summarize the nature of the debates and the global questions that arose from them. We seemed to find ourselves operating on two dimensions. The first dimension concerned our role as faculty developers. The question was framed in terms of our integrity versus our survival: what should our role in the university be ideally, and what is our actual role? Are we in a position to make the university a better place? How do we react to the university as it is and how do we in fact ensure we're doing what we think we ought to be doing? The other dimension concerns the university and faculty development but it focuses on the university itself: what direction is the university going in? What is the role of the university in society? This is the context in which we find ourselves and it affects everything we do as faculty developers. How do we respond to the role of the university in terms of faculty development? What is the milieu within which we operate and how do the roles of the university in research or teaching or service affect what we do?

The debate ranged over, first of all, the role of the university, and the fact that it was changing: that we were under many kinds of pressure to fulfill different roles for different people. Chief among the questio[illegible]fect of the OECD document entitled *The univers[illegible] and th[illegible]*. In Europe, in North America, and around the wo[illegible] being asked to be a service agent; to work with governm[illegible]t social priorities; and to be responsive in the univer[illegible]ese priorities. That is one possible direction the university could take. There are others. We know that traditionally the university has been a center for the advancement of knowledge, a center for the documentation and dissemination of knowledge. We also know that there is tremendous pressure for technological development and universities are being asked to consider that a priority. Our discussion this morning centered for some time on what kinds of services our governments ask us for, and whether we should or could operate in response to requests, more like a business. Can we be responsive to the needs of society? To what extent and in what manner are today's universities autonomous? How, in fact, does the university see itself and can it sustain its role? There are many questions about the changing role and changing aspects of the university.

One of the major responses to this situation was the possibility of our becoming community problem-solvers. If the university becomes more oriented to the community, to going out and dealing with real social problems as we see them, whether they concern recession, retraining needs, new jobs, new questions of social equality, and these are never-ending questions, how do we as faculty developers respond? And how do we affect how the university operates? This is a very important question and we debated that for a considerable time. The second question was that of who our constituents are, both at the university level and at the professional and faculty development level. As members of the university we have to respond to a great many different people. How do we prioritize? How do we respond to the varied requests that are made of us? Is it possible for the university to become technologically advanced while also attending to social problems, such as equality, or the provision of greater access? All of these are big questions and we didn't come up with any one answer. You will notice that there are more issues than insights, but the issues commanded a great deal of attention.

A major question for faculty developers was whether we were professionals or not. What did it mean to be a professional in faculty development? What skills should we have? How should we address these questions and, do we need more training? One of the outcomes of our discussion was the agreement that we probably need to spend more time looking at ourselves and deciding what our own criteria are and what standards we should meet. Part of the debate ranged around whether we are credible, whether others in the university accept what we have to say. The question was approached not so much in terms of how we sell ourselves but how, in fact, we can provide something that is useful to them. There were suggestions that we might want to get together and talk about our roles specifically: how we affect the university and how much responsibility we can take for dealing with the major questions that the administrators in our universities have to deal with.

This led us to a discussion about decision-making methods: how decisions are made in the university; who has responsibility for them; how many people are involved in them, and how open the decision-making process is. Throughout the conference we heard people talking about whether decisions were made on a hierarchical basis or whether they were made on a more democratic basis; whether universities operated in a collegial manner or whether there were areas where certain people should be making decisions and have the responsibility for them. We didn't come up with any major conclusions, but there were suggestions that we have to get as many people as possible into the decision-making process. At the same time, there are dangers in decentralization because it means that resources are going to places where they might not be best used and we have to have some overall picture. Overall it is a question of institutional decision-making and how in fact we decide where resources are to be allocated, another critical question in a time of limited resources.

This brought us to the last question, a broad question. What kind of models are we using? What kind of theories do we have to guide us? And what kind of theories and models are our universities operating on? At one time the university operated quite independently and it was not expected to govern itself, or govern any part of society in any particular way. Now we notice that we seem to be running our universities according to economic models. The question arose as to whether that was the only model we had, or whether it was the best model. In an economic model, the important considerations are the number of students and job requirements in the society, and the criterion is survival. In a model focussed on survival, you deal with the here and now and with attending to problems as they come up. On the other hand, the university has other aims and other goals. The university is a center for inquiry. The university does have research functions. The university has other service functions that are concerned more with social equity and access, with getting people who have not had the opportunity to learn into the learning process. So there is a possibility of different models that we would be well advised to consider. We do not have extant psychological models for the university which we might be expected to have as people who are interested in the improvement of teaching and learning. As faculty developers, we think more in terms of individual differences and the access of individuals to resources, with the goal of improving learning. Would such a model or theory be applicable in the university as a whole? That question brings us back to the interaction between faculty developers and the university. Where do we get our ideas and where are we going in the future? We did not find too many answers but we had a very good debate.

Summary of Group Discussions

Student Learning

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Introduction

The discussion group was representative of a wide range of disciplines, interests and points of view. Its concerns, illuminations and recommendations embraced: conditions which constrain and which facilitate student learning, as well approaches which narrow or enrich student learning. Some current issues and movements were considered and their implications assessed. The following paragraphs represent the major points raised.

Constraining Factors

There has been an assumption that learning is of one kind. Until recently this was the prevailing theory. It asserted that whatever differences exist are differences in rate learning and in complexity and elaboration but not in kind. As Adams and Biddle (1970) found, "The social behaviors that may be manifested in the classroom are remarkably limited... Task behaviors predominate... individuality can only be manifested to the extent that pupil A gets further... than does pupil B."

In contrast is the view expressed by Broadbent (1973) who complained that there is an unfortunate habit of mind among most researchers: they look for a constant rule of behaviour which will apply to all people, and to the same person on all occasions. He goes on to say that much recent.work shows that quite different strategies of performance can be adopted regularly by different people, or from time to time by the same person. "The problem ... is not ... to describe the one unalterable set of principles which control behaviour... . Our problem is rather to devise, elaborate and compare many different possible ways of organizing the mind."

To compound and confine the restrictions of the 'learning is of one kind school' there is the widespread adoption of multiple choice methods of assessment. Whatever the motives for this narrowing of evaluation types - greater objectivity, comparability between sections, etc. - it is nevertheless the case that the objectives of instruction are determined by the method of evaluation. What students learn depends on how they are tested and examined. This is a widely understood aspect of the hidden curriculum which is, however, informally related to the difficulty level of instructors' courses rather than to qualitative differences in what students learn (e.g., the ability to solve related problems rather than to apply rote-learned rules of thumb).

Another kind of constraint on student learning is the climate and structure of administration of an institution. This was brought out by personal reminiscence of the college regime of a well-known advocate of liberal arts education, President Robert Maynard Hutchins. He wrote (1936) "Education implies teaching. Teaching implies knowledge. Knowledge is truth. The trush is everywhere the same. Hence education should be everywhere the same." However, it was content which must be the same. Variations in method were permitted. "Allowances for individual differences should be provided for by abolishing all requirements except the examinations and permitting the student to take them whenever in his opinion he is ready to do so." It seems that in this institution the only feedback given to students was the examination results!

Added to these constraining factors was the assertion that students often learn in spite of their teachers who do not sufficiently realise what is unclear to students - another absence of feedback. How much needs clarification and how many gaps need to be filled becomes shockingly apparent to the teacher who prepares computer-based learning programmes.

Facilitating Student Learning

In spite of the above limitations it was made very clear that there exist, now, many simple, inexpensive, non-technical means to improve student learning. Specifically mentioned were providing summaries, giving frequent positive feedback, and peer learning. In spite of the work on advance organisers which is misleading in its implication the weight of evidence is for statistically and practically significant increments to learning outcomes (recognition, recall and transfer) if summaries are given of units of instruction and reviews are made of groups of units (i.e., overall review of a teaching learning session containing several units). Wright and Nuthall (1970), Leith (1971) and others have summarised research on comparing overall and interspersed previews and reviews in a wide range of subject matters. The outcome has consistently favoured intermediate summary and/or overall review.

There is also a wealth of evidence about the value of giving immediate knowledge of results and other forms of positive feedback. Negative feedback (that is, discouraging comments) have a systematically deleterious effect (Leith and Davis, 1968).

Evidence about the provision of feedback is summarised by Annett (1969), Block (1971) and by Hilgard (1975) among others.

Peer learning though not as widely researched as some aspects is well-established as a means to humanize instruction, promote intrinsic motivation and to increase attainments. There is evidence of brighter - slower dyadic interactions benefiting both contributers (Leith, 1974).

While these simple means will guarantee increases in learning even in the present constrained systems of instruction and evaluation, it is desirable that students should have the opportunity to experience multiple modalities of learning and to learn to improve their repertoires of strategies of learning. "People ... Learn to Learn differently. Some do so by memory and rote without reference to 'logic'... while some learn by demonstration without the student... do(ing) anything himself. Some ... stress doing... while others have very little of the pragmatic." (Hall, 1959). There is a growing interest in the identification of strategies of learning and in teaching students how to utilise their well-practised procedures, to polish and elaborate little used ones and to learn strategies which are absent from their range of techniques for learning. Claire Weinstein's paper (1982) describes successful methods for doing this and O'Neil (1978) has edited a collection of reports on the topic including one by Weinstein.

Some Current Issues

The idea that different individuals may have different sets of strategies connects with an enterprise which had wide appeal for several years but limited success. This notion that there are individual differences such that a particular approach to learning may help one student and handicap another was explored mainly in relation to aptitude differences. Successful research has concentrated rather on personality differences in terms of preferred methods, techniques and approaches to learning which may be seen as preferences for strategy differences. Highly structured, didactic, reproductive types of learning versus unguided discovery modes favour students with different temperaments and approaches to study and learning. The emphasis for practical instruction is not however on choosing optimal modalities for different kinds of students (except perhaps for C.A.I.). It is for giving students the opportunity to find new strategies and perfect them in order to cope with a wider range of learning situations.

All of the points raised call for teacher interventions - to summarise, give feedback, arrange conditions of learning,match evaluations to objectives and to provide instruction in learning how to learn. However, there is a movement or a complex of points of view variously called phenomenology (-ography) symbolic interactionism, ethnomethodology, etc. These viewpoints reject attempts to carry out objective research (it's all subjective, relative, self-fulfilling). The research which they call for is participant observation, interview (and by extension questionnaire!) typically, students describe what they do when learning. The outcome is an emphasis on process and a distinction between surface- and deep-processing. The point of view seems to oppose teacher or investigator intervention and to rely on the reports made by students. The difficulties of self report and the abjuring of opportunities to optimise conditions which promote learning seem unnecessarily limiting and potentially biasing. Ford's (1981) exposition of qualitative viewpoints may be considered and comments by Gage (1978) p8 may be considered.

References

Adams, Raymond S. and Biddle, Bruce J. (1970). *Realities of Teaching: Explorations with Video Tape*. N.Y., Holt, Rinehart & Winston.

Annett, J. (1969). *Feedback and Human Behaviour*. Harmondsworth, Penguin Books.

Block, J.H. (1971). *Mastery Learning*. N.Y., Holt Rinehart & Winston.

Broadbent, Donald E. (1973). *Defence of Empirical Psychology*. London. Methuen.

Ford, Nigel (1981). Recent approaches to the study and teaching of 'Effective Learning' in Higher Education. *Review of Educational Research*, 51, 365-377.

Gage, N.L. (1978). *The Scientific Basis of the Art of Teaching*. N.Y., Teachers College Press.

Hall, Edward T. (1959). *The Silent Language*. Greenwich, Conn., Fawcett Pubs. Inc.

Hilgard, E.R. and Bower, G.H. (1975). *Theories of Learning*. Englewood Cliffs, N.J., Prentice-Hall.

Hutchins, Robert Maynard (1936). *The Higher Learning in America*. New Haven, Conn., Yale University Press.

Leith, G.O.M. (1971). Conflict and interference: studies of the facilitating effects of reviews in learning sequences. *Programmed Learning and Educational Technology*, 8, 41-50.

Leith, G.O.M. (1974). Individual differences in learning: interactions of personality and teaching methods. in *Personality and Academic Progress*. London, Association of Educational Psychologists.

Leith, G.O.M. and Davis, T.N. (1969). The influence of social reinforcement on achievement. *Educational Research*, 11, 132-137.

O'Neil, Harold F. (ed.) (1978). *Learning Strategies*. New York, Academic Press.

Weinstein, Claire E. (1982). Cognitive learning strategies: problems and promise. Proceedings Eighth International Conference on Improving University Teaching, July 1982, Berlin, F.R. Germany, pp. 61-66.

Wright, C.J. and Nuthall, G. (1970). The relationships between teacher behaviors and pupil achievement in three experimental elementary science lessons. *American Educational Research Journal*. 7, 477-91.

THE EFFECTS OF TECHNOLOGICAL INNOVATION IN HIGHER EDUCATION

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My task is to present a summary and synthesis of the many contributions made during the discussion. That discussion was in fact, a very lively one, with a high level of participation covering a wide range of topics. Of necessity, part of this report reflects my own reaction to points made in discussion. The greater part however does, as far as is possible, convey the major problems considered, and solutions proposed, during what was, inevitably, an all too brief encounter.

In preparing this report it occurred to me that we have, during this conference, spent a considerable amount of time talking about the impact of new technologies on university teaching. In doing so we have felt that we are in an unique situation, that "all this is new," that we are going to have to adjust our ways of thought and behavior in facing an entirely new problem.

Yet, it seems to me, that in the Biblical phrase, "nothing is new under the sun," I realized that the monastic preceptions at Glenderloch, or indeed at most of the seats of learning throughout Europe, were facing similar problems some five hundred years ago.

Gutenberg had invented movable type, William Caxton had introduced the technique to the British Isles, and the whole "process of scholarship" was never to be the same again. Instead of spending long hours inscribing and illuminating, or even longer seeming hours copying from manuscript or "dictated" texts, scholars were able to have immediate access to "the word" in print. Even at that time one can imagine the teachers decrying this "new fangled" facility, and hear them arguing that the student could not be trusted to read, or not learn if he did, and that the tried method of copying from the instructor's reading was the only certain way. I could expatiate on this at some length, but I would like to make this analogy. That 500 years ago there was a fantastic technological revolution in universities. The universities coped with that, but many of our colleagues still have not come to terms with it. In other words, you will still find a high proportion of teaching done in a pre-Gutenberg mode, standing in front of a class and expecting the class to write down what is being said. I am emphasizing this because I feel we should begin to look at what our role is in the university as an appointed academic, and whether we have in fact come to terms even with Gutenberg and Xerox, let alone the computer and the videodisc. Having said that, however, I think there has been one remarkable change and this may derive not only from the research, which has been extensive, in the psychology of adult learning, but also in the social changes which have taken place in the last 15-20 years. That is, a recognition of the primacy of the learner in the university system as distinct from the primacy of the academic. The world of the university, to my mind, was changed much more on the streets of Paris in 1968 than it was by the microchip, by the videodisc, or anything of that sort. From that point on, we began to recognize that universities were about learning, not learning in the sense of the publication of learned articles, but about learning for and by the student. The crucial point of technology in relation to the university, again not only from my own point of view, but very much emphasized in the group discussion is that technology can ensure that each learner can meet his own learning needs; that although learning needs to be managed, nevertheless if the full potential of current technology is realized, each learner can follow their own paths to the achievement of the learning goals which they will set in collaboration with their teacher and that there is no longer the need for a highly restrictive, highly directive approach to learning. There are an enormous number of examples of this both from the high and the low technology. I jokingly referred to Gutenberg, but we do now recognize that students do not need to write down or attempt to write down, every word of the lecture because lecture summaries, notes, handouts, can be reproduced and distributed at a cost which is within the means of most institutions or of most students. We should recognize that reprographic technology is possibly one of the most important advances which has been made within the last decades.

In the higher technology sense, the student can have access to a wealth of materials spread not only within his own institution, but within his own country and throughout the world. It is increasingly possible, for example, for medical students to have access to the medical libraries of the United States, Britain, the Soviet Union, both as a means of study, and even as a means of diagnosis. This is at the other end of the technology spectrum, from the lecture handout, but the fact that the student can have that access without "asking the teacher," without "filling out the library form," is one of the really important aspects of the introduction of technology. The technology, itself, however, is posing very considerable problems, for the academic in understanding it, appreciating it, and perhaps changing his role. We, in Britain, are appointed as "lecturers" in universities and this obtains in many other countries, in others the title "professor" is used. Both of these titles have certain connotations and many "lecturers" sincerely believe that they are not teaching unless they are lecturing. It was implied in our discussion, that in some Scandinavian universities academics are considered as "not doing their job" unless they are lecturing for a certain minimum number of hours a week and minimum number of weeks per year. Yet we now face the possibility that, from the time of appointment to the time of retirement, an academic may never give a single lecture; may never behave in the classic professorial manner of "grasping the lectern and telling them." We may prepare material which students will access in a whole number of ways. We may work with a team of colleagues, and this is something which university organizations need to recognize, that the future lies with teams in many cases, rather than with individuals. Teaching has often been regarded as the loneliest of professions but increasingly has got to become a collaborative venture. One of the models at which we should look, a fairly advanced technology model, is that of the Open University and its course teams.

A teacher may spend a very considerable amount of time in preparing material which will be stored and accessed in different ways, but it still requires all the scholarship, all the technological and pedagogical skills of heretofore. In doing this the teacher can and should be freed for the much more important interpersonal and interactive aspects of learning. This may be more difficult to accept but I can envisage many more open office hours, much more one- and two-person tutorials being required of university teachers because they will no longer need to be standing in the classroom "haranguing the mob." They should be providing that, to quote our discussion group, "tender loving care and warm breathing human contact"--within limits, of course (you can lose tenure for the latter if you're not careful), which is again one of the major reasons for students coming to universities. Sometimes I think we forget to ask students "why have you come?" Their first reaction might be "to get a degree"; their second "to have a good time," but two surveys which I have made (one in Britain; one in the United States) shows that among their major reasons for coming is to talk with academics whom they perceive as being "interesting," "informed" and "helpful." This may not be the general public's perception of the university professor but it is the perception which a number of students have when they first come to the university. I mustn't move too far into that because I am supposed to be talking about technology, but on the other hand there is the enormous possibility of more interpersonal contact facilitated by increasing use of information storage, opened to student retrieval and access. However a whole number of other aspects of technology can be used and so far are very little considered. One sees so often in American institutions of higher education, towards the end of semesters, towards the end of years, academics walking around haggard, drawn, anxious. Administrators walking around angry, agressive and exasperated because someone has "lost the grades" or the grades aren't right or "what are we going to do about this student who has barely a passing grade but who says he turned in six pieces of work that have never been graded." A personal computer on every desk, "an Apple for the teacher,"--if one may be commerical,--would enable teachers to record, to store, an enormous amount of information on their students' performance, and to access it much more simply than the agonizing processes which are gone through at present. I think that we have not yet, as academics, recognized the enormous potential of a personal computer in making our own life much easier, as well as helping students and helping students learn.

Another problem which I think academics are going to face with the introduction of technology, particularly high technology, is the fact that preparing programs, preparing material, is very time-consuming. One of the resistances to the introduction of programmed learning was that any effective learning program replacing a 40-minute lecture, usually took about 140-180 hours to produce. This represents a tremendous amount of intellectual and emotional capital stored in that program. Again, in our discussion group the analogy was drawn that such a program is "cast in concrete" or even "cast in gold" and that there is a tremendous resistance to changing aspects of a program and even more resistance to scrapping a program into which so much intellectual capital and so much "technology time" has been sunk. The personal computer, the portable video system, the audio tape plus slide are helping to reduce this effect, but there is still a great reluctance on the part of academics to commit the amount of time needed to prepare material, for example, for use in computer inter-active simulation, or a video disc program.

However, in the same way that the modern day successors to the monks of Glenderloch have very much come to terms with Gutenberg, using computer type setting, high speed reprographic techniques and holography, so will university teaching assimilate and use the technologies we have been considering. To do this most effectively however, there will need to be changes, not solely in the attitudes and behaviors of academics, but also, and essentially in the organization and administration of our academic institutions.

Teachers and students have adapted to the changes from "sand table" to paper, from quill-pen to word processor, and will I am sure continue to use all the available means to continue in the pursuit of learning.

FACULTY DEVELOPMENT AND EVALUATION

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Participants were invited to identify the insights which the Conference had given rise to and which might be usefully shared with the plenary session to follow the group discussions. They were also invited to identify actions which might enhance the insights gained. There was some resistance to a structured agenda and it was decided to focus on valuable insights which might be shared.

The issues raised by participants fell into three areas related to:

1. definitions of development/evaluation
2. determinents of the process
3. ways to initiate the process

1. Definitions of Faculty Development-Evaluation.

1.1 Is it related to improving teaching? A number of participants saw this as too narrow a definition of the terms.

1.2 Is it related to setting priorities? Some thought it should help establish the relative importance of teaching, research and administration.

1.3 High quality initiatives for faculty development - evaluation were accepted as an essential characteristic.

1.4 The concept of Staff Development needs to be refined.

1.5 Definitions of Development should be broad descriptions.

2. Determinents of the Process.

2.1 Knowledge/Methodologies.

Rapid change in knowledge, in technology and in the methodologies for communicating the competencies required by staff demand flexible adaptable development.

2.2 Relationships

The changing relationship between student and staff requires greater open attitude on the part of staff to students' needs - as learners.

2.3 Organisation Structure

It is important to identify the gatekeepers in organisations who control the advent and rate of change.

2.4 Society

The importance of cultural influences of society upon educational institutions as determinents of objectives and as determinents of appropriate change, and change at an appropriate pace was highlighted by participants from non-Western cultures.

3. Ways to Initiate Development and Evaluation

3.1 Organisation analysis was identified as a prerequisite of determining appropriate focus of development/evaluation for different institutions.

3.2 A regression formula to review and evaluate the performance of individuals was considered to be a useful starting point for agreeing priorities and identifying required development.

3.3 Development interventions of high quality were considered to be urgently required.

CONCLUDING REMARKS

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I would like to thank the University of Maryland for chosing NIHED as a site. I would like to thank you, the participants, for sharing your experiences with each other. I hope it will lead to further communication resulting in transfer of expertise between institutions.

Can I also thank the presenters of papers, workshops and seminars for agreeing to the electronic storage of their contributions. Yesterday, Dr Carlo Vernimb of EEC Commission on Information, Marketing and Innovation confirmed that the experiment of which the storage and accessing of IUT documentation forms part, has been assigned first priority for EEC funding and will be commenced before October this year.

I am grateful to those of you who have expressed your satisfaction with the Conference to David Owens, John Hurley, myself or our colleagues. The many members of the Institute: students and staff as well as the caterers, Limerick Travel, Bord Failte, and our exhibitors who have helped with the Conference appreciate your recognition of their work.

After a visit to Dublin in the 1930s G K Chesterton wrote an essay on the character of the City as it is reflected in its flags.

A week last Friday, Ben Massey's office rang me to confirm some final details just before Julie Porosky left to travel to Dublin. One item which I raised with the secretary was followed by a long pause: "A flag", she said. "I do not know if we can manage that". Well, in spite of the administrative procedures which surround the loan of a valued symbol, Julie arrived in Dublin with the University of Maryland flag in her baggage.

As it flutters in the breeze on our campus that flag represents for me the kind of flexible collaboration between the staff of the University of Maryland, University College and NIHE Dublin which has resulted in the Conference we have experienced together. To the staff of both Institutions can I say very sincerely: Thank you.

I wish you all a safe journey home or as we say in Gaeilge "Go neiri on bothar libh".